

## Acromioclavicular joint reconstruction with the LARS ligament in professional versus non-professional athletes

Giulio Maria Marcheggiani Muccioli · Christopher Manning · Philip Wright · Alberto Grassi · Stefano Zaffagnini · Lennard Funk

Received: 11 February 2014 / Accepted: 11 August 2014  
© European Society of Sports Traumatology, Knee Surgery, Arthroscopy (ESSKA) 2014

### Abstract

**Purpose** To compare outcomes of acromioclavicular (AC) joint reconstruction with ligament augmentation and reconstruction system (LARS) ligament in professional and non-professional athletes at 2-year minimum follow-up.

**Methods** Forty-three patients (men; mean age 30, range 19–54 years) with Rockwood type III to V chronic AC joint dislocations underwent AC joint reconstruction with LARS ligament and standardized rehabilitation. Patients were divided into two groups: professionals (22) and non-professionals (21). Clinical and radiological evaluations were performed preoperatively, at 3- and 24-month follow-up.

**Results** All clinical (Oxford and Constant) scores and patient satisfaction improved significantly from preoperative to follow-up intervals ( $p < 0.00001$ ). However, professionals showed nonsignificant improvements from 3- to 24-month follow-up in Constant. Although groups differed preoperatively in Constant ( $p = 0.037$ ), they were not

different in preoperative-to-postoperative differences in clinical scores, postoperative final satisfaction and median time to return to unrestricted activity [4 (interquartile range 3–5) months to return to full sport in professionals]. Follow-up radiographs revealed an AC joint ratio (clavicle inferior-to-superior translation as ratio of AC joint height) of 0.09 and 0.16 in 8/22 professionals, 0.19 and 0.31 in 9/21 non-professionals, 0.14 and 0.24 in 17/43 overall patients at 3- and 24-month follow-up, respectively. Slight loss of reduction ( $0.25 < \text{AC joint ratio} < 0.50$ ): 21 %. There were no significant clinical–radiographic correlations. Complication: one coracoid fracture at follow-up and one wound infection.

**Conclusions** AC joint reconstruction with LARS ligament did not reveal differences in clinical outcomes between groups, with 2 % of failures (re-dislocations) at 2-year minimum follow-up. Superior radiological outcomes in professionals were not correlated to clinical results.

**Level of evidence** Therapeutic study–prospective comparative study, Level II.

**Electronic supplementary material** The online version of this article (doi:10.1007/s00167-014-3231-y) contains supplementary material, which is available to authorized users.

G. M. Marcheggiani Muccioli (✉) · A. Grassi · S. Zaffagnini  
Laboratorio di Biomeccanica – Istituto Ortopedico Rizzoli,  
University of Bologna, via di Barbiano, 1/10, 40100 Bologna,  
Italy  
e-mail: marcheggianimuccioli@me.com

C. Manning  
Manchester University, Manchester, UK

P. Wright · L. Funk  
Wrightington Hospital, Wigan, UK  
e-mail: lenfunk@shoulderdoc.co.uk

L. Funk  
Salford University, Manchester, UK

**Keywords** Acromioclavicular joint · Dislocation · Reconstruction · LARS artificial ligament

### Introduction

The acromioclavicular (AC) joint dislocation is frequent in athletes [2] and can be classified into six types according to Rockwood et al. [3]. Generally, type  $\geq$ III injuries accounted for 3.6 % of all AC joint dislocations and required a surgical reconstruction in many cases (22.2 %) as these are associated with pain and reduced function [5].

Traditionally, the Weaver-Dunn technique was used to treat AC joint dislocation; however, this technique has