

# Single-Loop and "Y"-Shaped Double-Loop Tightrope Fixation for Fresh Rockwood III-V Acromioclavicular Joint Dislocation: An Observational Study Lasting At Least 3 Years (3-6 Years)

Minjun Deng\*

Department of Medicine, The First People's Hospital of Huzhou, Huzhou, China

## DESCRIPTION

Acromioclavicular (AC) joint dislocation is a common athletic shoulder injury. The AC joint is a complex linkage joint located between the medial border of the acromion and the distal end of the clavicle. The stable structure of AC joint consists of the AC ligament, the Coracoclavicular (CC) ligament and joint capsule located between the medial margin of the acromion and the distal clavicle. Incorrect treatment often results in Acromioclavicular joint deformity, shoulder pain and loss of motor function. In recent years, research on the surgical treatment of AC joint dislocation focused on the anatomical reconstruction of the CC ligament. Reconstruction methods include allograft ligaments, artificial ligaments, or suspension fixation devices that mimic the anatomical and biomechanical characteristics of the CC ligament [1-4]. The Tightrope is a classic technique for suspension fixation devices with adjustable tension [5]. However, the number and structure of the loop are still under discussion. In order to achieve sufficient stability, double loops were used in the past to reconstruct the trapezium ligament and the conical ligament. At that time, such a fixation method would lead to a large number of bone losses of the coracoclavicular process and clavicular bone, which was prone to iatrogenic fractures after surgery. We hope to fix the dislocated Acromioclavicular joint with the simplest loop structure. The structure can achieve maximum stability with minimal damage. "Y"-shaped Double-loop achieves Acromioclavicular joint fixation by establishing a single bone tunnel in the coracoid process, maximizing bone retention in the coracoid process. So we compare the fixation of the single loop with that of the Y double loop. A retrospective study was conducted to compare the ability and functional recovery of the two fixation methods. So we compare the fixation of the single loop with that of the "Y"-shaped Double-loop. A retrospective study was conducted to compare the ability of maintain reduction and functional recovery of the two fixation methods. The contents of our evaluation included imaging evaluation and functional evaluation. The former includes the shortest distance from the inferior cortex of the distal clavicle to the superior cortex of the

coracoid. The latter includes visual analogue scale (VAS), and University of California, Los Angeles score (UCLA), and a Constant-Murley score. The VAS score, UCLA score and Constant-Murley score of the single-loop group and double-loop group at the last follow-up were  $0.6 \pm 0.7(0-2)/0.6 \pm 0.7(0-2)$ , respectively;  $31.6 \pm 1.5(29-35)/32.0 \pm 2.9(29-45)$ ;  $94.6 \pm 2.7(89-100)/94.6 \pm 3.1(89-100)$ . We found that both single loop and double loop Tightrope can achieve satisfactory results in the treatment of fresh Rockwood iii -v Acromioclavicular dislocation. The single-loop group has the risk of postoperative reduction and loss, which may lead to the abnormal appearance of the affected shoulder joint However, the advantages of single-loop fixation are shorter operative time, less bleeding, and less scarring. Therefore, the single-loop fixation can be selected for patients who do not exercise much.

Although this study is not the first to adopt "Y"-shaped Double-loop fixation, but the advantage of this study is that it has been observed for at least 3 years, and has important reference value for evaluating the medium and long-term therapeutic effects of tightrope fixation in the treatment of Acromioclavicular joint dislocations.

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**Correspondence to:** Minjun Deng, Department of Medicine, The First People's Hospital of Huzhou, Huzhou, China, E-mail: liuyedaok@163.com

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