



ACROMIOCLAVICULAR RECONSTRUCTION WITH THE TIGHTROPE TECHNIQUE PRESENTATION OF A CASE

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ABSTRACT

The anatomy of the acromioclavicular joint and its complex role in the movement of the shoulder continue to be essential for the treatment of his injuries. The affection of the acromioclavicular joint is approximately 12% of those that occur in the shoulder girdle, with a male-female ratio of 8: 1; it is frequent in athletes. Most acromioclavicular dislocations occur from a direct blow to the shoulder with the adducted arm, injuring the acromioclavicular and coracoclavicular ligaments. The initial approach should include a clinical and radiographic evaluation of the acromioclavicular joint, even with special radiographic views. The bibliography describes more than 60 techniques for the reconstruction of the coracoclavicular ligament complex; however, there is no agreement on an ideal technique. 1,2

We present the case of a young adult patient, without significant personal history, who comes to our military hospital Quito-Ecuador due to a direct impact on the right shoulder, causing a bicycle fall, without loss of consciousness, where after an examination of The image is diagnosed with a distal third clavicle dislocation grade III, which is why surgical intervention is decided, choosing the TightRope technique as the best option due to its benefits over other techniques and being minimally invasive, with favorable results for our patient.

Objective: Describe which is the best surgical technique for the treatment of an acromioclavicular dislocation, presenting a clinical case and its results.

Methodology: This is a retrospective study of the TightRope surgical technique, emphasizing its positive results when implementing this method in a patient with acromioclavicular dislocation.

Conclusion: Currently the use of minimally invasive techniques are those that are chosen for their benefits. However, it must be taken into account that in our case where there was a type III clavicle fracture, TightRope AC surgery was chosen as the best option. The open technique described in this work is reproducible, without osteolysis or loss of reduction associated with the use of sutures in the short term.

KEYWORDS : TightRope AC, Acromioclavicular, Dislocation

INTRODUCTION

The acromioclavicular (AC) joint is one of the main joints that make up the shoulder joint complex. It is an arthrodiastase joint and is considered a true joint from an anatomical and physiological point of view.

They represent up to 10-16% of all fractures, the proportion is 5 per 10,000 inhabitants and predominate in men. They represent 44% of all fractures of the shoulder girdle. Their anatomical distribution is between 69 and 81% and they affect the diaphysis, while fractures of the medial third represent 2-4% and those of the lateral third constitute 10-15% of all clavicular fractures. Acromioclavicular dislocation (LAC) is a common injury, especially in athletes, accounting for 12% of shoulder injuries. It is secondary to a rupture of the acromioclavicular (anterior, posterior, and superior) and coracoclavicular ligaments (conoid and trapezoid), the latter being the most important for acromioclavicular stability.³

There are different types of scales to classify the LAC, however there are three that are used more frequently:

according to Rockwood, it is divided into VI degrees, while Tossy and Allman divide it into three degrees. The causes of this injury are in the vast majority direct and indirect trauma.⁴

More than 150 techniques have been described for the reconstruction of the coracoclavicular ligament complex; Despite this, a consensus on an ideal reconstructive technique has not been reached.⁵

Non-anatomical reconstructions have been noted in multiple studies to be biomechanically less functional than anatomical ones. Despite this, complications in anatomical reconstructions are as high as 50% in some series, mainly presenting loss of reduction early.⁶

In our institution, multiple techniques are performed for acromioclavicular reconstruction, however, it is chosen as the best option of the TightRope AC System, this technique is a coracoclavicular cortical suspension method described for the first time in 2007, it is made up of two metallic pills joined by a brand-specific sturdy suture system. It can be

performed by fluoroscopic control or by arthroscopy, being the second most advantageous because the position of the coracoid tablet is directly observed and with less chance of implant failure.⁷

Methodology

This is a retrospective study of the TightRope surgical technique, emphasizing its positive results when implementing this method in a patient with acromioclavicular dislocation.

CASE PRESENTATION

This is a 30-year-old male patient, resident in Pichincha, Ecuador, of active military profession where he exercises intense physical activities, he does not have a personal pathological history. He attended the Eugenio Espejo Hospital with a clinical picture of direct trauma to the right upper limb, having an apparent fall from a moving bicycle, after which he suffered severe pain and functional impotence. Upon arrival at the trauma service, the patient was evaluated, where pain at the level of the right clavicle, more edema ++ / +++ with discrete ecchymosis, and limited arches of mobility were observed. Reason why it was decided to perform extension exams, including radiographs, where a fracture of the diaphysis of the right clavicle is visualized. (Photo 1)



Photo1: Fracture of the middle third of the left clavicle.

Your admission is decided for multidisciplinary management. It was classified as a Neer type III fracture. Reason why required surgical treatment with suspension system (TightRope AC)

Regarding the surgical technique: The patient is placed in the position of beach chair or low lateral decubitus, with general anesthesia administered. The arthroscope is inserted into the glenohumeral joint through a standard posterior portal. An anterior-superior portal is created using an outside-inside technique, using a spinal needle to position the portal. A partially threaded 7 mm cannula is inserted through this portal. An 8.25 mm Twist-In cannula is inserted through this portal and debridement of the rotator interval is started. In addition, a 4.5 mm Full Radius shaver blade is inserted through the anterior-inferior cannula up to the rotator interval and debrided until the tip of the coracoid can be seen.

Once the interval is cleaned, begin cleaning the base of the coracoid using a shaver blade and a radio frequency device. At this point, the Arthroscopy.

It can move to the upper portal, making it easier to see the base of the coracoid. The bursa and periosteum are detached from the base of the coracoid for a complete view of the underlying surface. (Photo 2)



Photo2: Approach and direct passage to the coracoid

The surgical intervention is successful, with minimal bleeding and without complications. Patient with favorable evolution is decided to be discharged with analgesics and control by external consultation in 8 days. (Photo 3)



Photo3: A radiography of the immediate post-surgical shoulder erasing the acromioclavicular Tight Rope technique

DISCUSSION

Acromioclavicular dislocation is one of the most common shoulder pathologies. It currently constitutes 12% of the body's dislocations. In general, the same mechanisms in the genesis of LAC can cause fractures of the distal or lateral third of the clavicle, although direct and high-energy trauma are the most frequently responsible.⁸

Although distal clavicle fractures are usually banal and treatment is conservative by immobilization and subsequent functional recovery after bone consolidation, surgery is required in certain cases, which also gives positive results. However, its treatment to this day is subject to controversy; since in a study by Hoh et al., in 425 cases of clavicle dislocations, conservative treatment caused a third of absences of consolidation, with significant differences compared to the surgical one.⁹

The TightRope acromioclavicular system as a surgical technique is one of the newest on the market, therefore there are few publications on its results of acromioclavicular reduction, but it has shown excellent post-surgical results, especially when it is placed arthroscopically and with two implants.¹⁰

It has the advantage of not requiring the removal of material in a second surgical period, since it is a flexible method and is less susceptible to post-surgical failure and pain. As disadvantages it can be pointed out that it is an expensive implant and that it only exerts a cephalocaudal stability and not an anteroposterior one, which can generate a failure in the reduction when resuming normal physical activity.¹¹

Thus, our patient underwent surgery using the TightRope system, the same as we have seen, improves compression resistance, with less risk of secondary displacement. We believe that the indications for surgical treatment must always be kept in mind; In case of doubt, it seems from these studies that surgical treatment would yield better results. With the aforementioned, it can be noted that this TightRope system contributed good results to the exposed clinical case, in the same way that its recovery was faster.

CONCLUSION

Currently the use of minimally invasive techniques are those that are chosen for their benefits. However, it must be taken into account that in our case where there was a type III clavicle fracture, TightRope AC surgery was chosen as the best option. The open technique described in this work is reproducible, without osteolysis or loss of reduction associated with the use of sutures in the short term.

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