INSERTIONAL TENDOPATHY OF THE SHOULDER

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Introduction

Arthroscopic rotator cuff repair is becoming less controversial and indications are evolving because of improved techniques, surgeon's skill and of understanding of the pathophysiology of the lesion.

Classification

In the past almost all the complete arthroscopic cuff repair studies reported a single "line" anchor placement on the humerus. Anatomic studies demonstrated that the insertion of the rotator cuff tendons is represented by a wide site larger than 10mm, called foot print insertion of the tendon (1).

This type of repair can not and should not always be performed and in order to define the indication of a foot print repair we proposed a classification of the cuff tear that clears the pattern of the lesion: a) Early: the tendon/s is/are disconnected from the bone, without important retraction, easily reducible and with a valid muscle tissue. These lesions have the best prognostic outcome and need a tendon-to-bone repair reproducing the tendon footprint. b) Late: the tendon/s is/are disconnected and retracted from the bone but still have a valid muscle tissue. These lesions have a good prognostic outcome, but need a careful tendon release, may need side to side sutures to reduce tendon dimensions and tension, tendon to bone repair with anchors in a footprint fashion. c) Too late: tendons are disconnected and retracted in an irreversible way medially and have an ipovalid muscle tissue. These lesions have a bad prognostic outcome, but can offer advantage to a selective repair in order to balance need, a careful tendon release, side to side sutures to reduce tendon dimensions and tension, tendon to bone repair with anchors. The purpose of this partial reparation is to re-equilibrate muscular couple, stabilize the damage and/or delay the progression of the lesion.

Surgical Technique

We prefer the beach chair position that allows an easier and dynamic assessment of the tear and is more comfortable for the patient and the surgeon. The procedure starts using a standard posterior portal (P) and anterior (A) portals. The aim is to perform a complete routine arthroscopic evaluation and to treat if necessary the associated pathology. Entry in the subacromial space must be easy and in line with the joint. As a rule all the portals are performed one thumb width inferior to the acromion edge, except for the mini invasive portals (MIP) that are performed where necessary to allow adequate anchor placement or tissue piercing.

Usually two portals are basically working: the A and the P; one or two are the view-portals: the lateral (L) and the postero-lateral (PL). PL portal is created one thumb width inferior to the posterior-lateral corner of the acromion. This via allows a better assessment of the subacromial space and instruments' handiness, in particular of the lateral zone of the rotator cuff.

As soon as you can, perform a L portal, just at the center of the lesion. This will be your view portal from which you visualize all the procedure.

Once analyzed the lesion in three dimensions from two points of view, types of suture used will be decided. We proceed with cleaning bones bed and removal of the residuals of insertion of the damaged tendon. The aim is to favor recovery but without exceeding, to avoid the weakening of suture anchorage.

When a side to side suture has been decided, the lesion will be visualized from the L portal. We start putting the first suture medially, 1 cm from the top of the lesion. The intratendinous passing of the suture should be performed with a non-absorbable suture of adequate size (#2 Ethibond), through the A or PL portal depending on the minor tendinous presence anterior or posterior. Aim of the side to side suture is to reduce tension on the suture, reduce lesion dimension and understand the pattern of the tear.

Anchor repair can be performed by using a conventional double suture anchor placed from an additional superior percutaneous portal (MIP) at 45° angle to bone level, through which a double suture (different colours) anchor will be passed. The sutures are so positioned in the MIP to make procedure easier.

In order to reproduce the anatomical insertion of the cuff (so called "footprint") we place the first anchor just near the articular edge of the humeral head and the other anchors lateral to the tendon.

Sutures on the medial anchor will be tied in a U fashion in order to release the lateral portion of the tendon, simple

sutures can be performed laterally.

Conclusions
It is important to analyse the different rotator cuff tears and classify the lesions in a practical and realistic way that will take in consideration all parameters for a correct operative strategy. We underline the necessity to obtain a high strain suture in order to reproduce the real foot print of the cuff insertion.

References
1. Dugas JR et Al. Anatomy and dimensions of rotator cuff insertions. J Shoulder Elbow Surg 11: 498-503, 2002.