

Treatment of SLAP-lesions

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Introduction

Pathology of the superior labrum of the glenoid was first described by Snyder et al in 1990.⁷ He classified the so called SLAP lesion (Superior Labrum Anterior to Posterior) in four types; type 1 is described as a marked fraying, while the biceps tendon and the superior labrum are stable attached to the glenoid; type 2 appears like a type 1 with additional detachment of the superior labrum and the attached biceps tendon from the glenoid; type 3 is a bucket-handle tear of the superior labrum, while the remaining labrum and the biceps tendon remain firmly attached to the glenoid; type 4 is a similar bucket-handle tear as in type 3, but the tear extends into the biceps tendon. The long head of the biceps originating from the superior pole of the glenoid at the supraglenoid tubercle is an important stabilizer in the shoulder joint. A detachment of the long head of the biceps from the superior pole of the glenoid thus causes superior instability of the humeral head (Figure 1).

Clinical findings

Andrews et al¹ described a 'popping' phenomenon caused by incarcerations of the detached labral-biceps-tendon complex in the glenohumeral joint. Patients report pain on activity, especially with flexion and elevation and external rotation motion. The apprehension test at and above 90° mostly causes discomfort or pain.

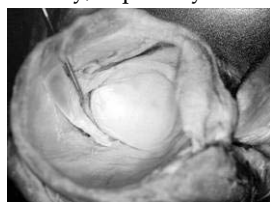


Fig.1.

Also, in a high percentage of patients, the palm-up and the O'Brien test are positive due to the tension on the tendon of the long head of the biceps. Physiotherapy usually does not have any effect on the symptoms of this pathological entity. The majority of SLAP lesions occur in young, active patients, who primarily engage in overhead activities

Surgical principles

Arthroscopic refixation of a SLAP lesion is a demanding surgical procedure. Generally two experienced arthroscopists are needed to

complete the procedure, because many steps require simultaneous working. Numerous techniques for SLAP refixation have been published.^{4, 5, 8, 9} (suture anchor-techniques, transglenoid sutures, staples). Labrum refixation with the Suretac device (Suretac, Smith & Nephew Endoscopy, Inc. Andover, Massachusetts) is a well-established technique.

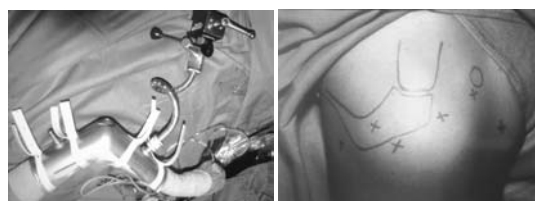


Fig.2.

Fig.3.

However, the technique contains some crucial steps and thus some potential complications, such as breakage of the device, if not tapped in correctly or lesion of the articular cartilage due to drilling in the wrong direction.

Surgical technique

The patient is positioned in beach-chair position.⁶ We prefer to put the arm of the injured side in a special elbow holder (Atlantech Medical Devices Ltd, N. Yorkshire, UK), which ensures both free movement of the arm and secure positioning in every desired position (Figure 2). After sterile washing and draping, it is advisable to mark out the landmarks for the arthroscopy: the acromion, the acromioclavicular joint and the coracoid process (Figure 3). For the first part of the procedure two standard portals are needed. The posterior portal for the arthroscope is approximately 1–1.5 cm inferior and medial of the angulus acromialis. The anterior portal for the instruments is created by introducing a rod into the joint at the superior edge of the subscapularis tendon under arthroscopic control. It is advisable to use a canula for the instrument portal in order to maintain constant intra-articular pressure. Anesthesia is usually induced endotracheally. This permits controlled intraoperative blood pressure reduction. Systemic blood pressure should not exceed 110 mmHg because otherwise visibility could be impaired by bleeding from the surrounding tissue. A pressure pump can compensate for fluctuations in blood pressure for short periods and is therefore advisable. After the portals are well established, the entire labrum is palpated with a hook probe, so that partial or complete detachments can be easily be visualized.

Type 1 lesions need no specific treatment at all, whereas type 3 lesions are treated by resection of the bucket-handle tear. Type II and type IV SLAP lesions should be reattached to the glenoid rim^{7,8}.

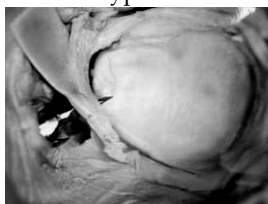


Fig.4.



Fig.5.

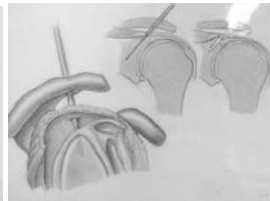


Fig.6.

The first step of the arthroscopic SLAP refixation is the preparation of the glenoid rim. The superior glenoid neck is debrided of soft tissue. Abrasion of the glenoid neck is performed with an arthroscopic shaver-abrader to create a bleeding bony surface (Figure 4). In order to place the Suretac anchors, an additional portal is created close to the lateral tip of the acromion. Care must be taken throughout the entire process of drilling. In some patients the acromion extends too far laterally and causes a too small angle of the drill when positioned at the superior neck of the glenoid (Figure 5, 6). In these rare cases a transacromial portal has to be created.

The transacromial approach was first described by Resch et al in 1993. After palpating the borders of the acromion, a skin incision is made in the centre of the acromion.

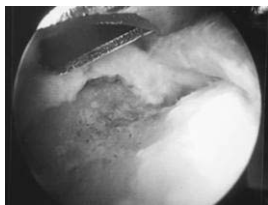


Fig.7.

A 7-mm drill is used to create this portal. After a longitudinal split of the supraspinatus tendon, ideal access to the superior labrum is possible. Fracture of the acromion as a possible complication has been reported. To avoid this complication the hole has to be drilled in the centre of the acromion. The special drills for the Suretac are brought in through the appropriate portal. These drills are cannulated and a highly flexible 1-mm diameter pin is engaged centrally protruding by 2-3 mm from the drill (Figure 7). With this pin the labrum then is loaded and reduced to the correct position, to which it should be reattached. The drill is advanced into the superior glenoid neck to a depth of 1.8 cm indicated by a step in the drill (Figure 8).



Fig.8.

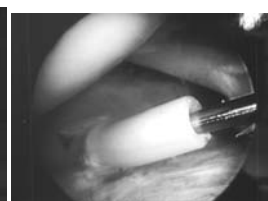


Fig.9.



Fig.10.



Fig.11.

The central pin is then disengaged and tapped gently to provide a secure fit, before the drill is pulled back. Care must be taken not to pull out the central pin during this maneuver. A second pin can be pushed in through the central hole of the drill to keep the first pin in position, while the drill is pulled back. After removal of the drill the Suretac device is then advanced along the guiding pin to the labrum (Figure 9). The Suretac is tapped in with the help of a cannulated punch and a mallet (Figure 10). A hook probe is used to check the secure fit of the reattached labrum. Finally the guiding pin is removed from the joint. A second suretac is applied through the anterior superior portal in similar technic, if needed. Usually two suretacs are needed for stable refixation. A diagnostic look and a wash-out of the arthroscopic fluid finishes the procedure (Figure 11). Postoperatively the operated arm is put in a shoulder sling.

Postoperative protocol

To provide secure healing of the superior labral complex to the glenoid rim, the operated shoulder is immobilized for 3 weeks in a shoulder sling. Physiotherapy usually starts in week 4 with gentle passive and active motion exercises restricted to 90° of flexion, 70° of adduction and 0° of external rotation. From week 7 postoperatively, mobilization exercises without restriction are allowed. We advise our patients not to return to demanding sports such as tennis, volleyball or snowboarding for at least 4 months after the surgery.

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