case of small coracoid graft.

Data:
Open Latarjet using one-screw fixation achieves a high rate of graft fusion Background The open Latarjet procedure is a surgical option for patients with anterior shoulder instability and is particularly indicated for patients with glenoid bone loss. The efficacy of this surgery is specified to the fusion of the coracoid graft in a good position. With this aim in mind, it is usually recommended to use 2 screws to obtain a satisfactory bone union. However, the coracoid graft is sometimes small in some patients and the risk of graft fracture is real. In addition, the use of two screws reduces the cancellous surface area, which decreases the cancellous bone contact between the glenoid neck and the graft. The aim of this study was to evaluate the fusion rate of the coracoid graft after mini-open Latarjet using only one-screw graft fixation. Methods The study design was a retrospective series of 45 shoulders operated for an anterior traumatic shoulder instability with mini-open Latarjet procedure. The coracoid graft was fixed with one 4 mm diameter half-threaded cancellous screw with washer. All patients were operated by the same surgeon. As a postoperative protocol, anteroposterior, lateral X-rays and CT scan were performed 3 months after the surgery for evaluation of the fusion of the coracoid bone graft with the objective to authorize the return to sport activity. All 45 shoulders were assessed by X-rays and CT scan. The criteria for fusion was a complete bone bridge on CT Scan between the coracoid graft and the glenoid neck. Results The average age of the patients was 32 years (23 to 55). No complications were observed, particularly no coracoid graft fracture happened. The mean time between the surgery and the CT Scan evaluation was 2.7 months. Bone union was achieved in 44 patients (97%). Only one patient did not consolidate his graft at this time. Conclusion One-screw fixation in the Latarjet procedure is an alternative to double screw fixation. It allows a high rate of fusion at 3 months. This technique can be used safely particularly if the surgeon judges that there is a risk of graft fracture like in case of small coracoid graft. Study level : 4.

Category: Shoulder - Instability

The Long Head Of the Biceps Tendon Does Not Provide A Clinically Significant Contribution To Anterior Glenohumeral Stability Even In the Setting of Glenoid Defects

Abstract ID# 22433
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Summary:
This biomechanical study evaluated the stabilizing effect of the long head of the biceps tendon and observed no clinical relevant contribution to glenohumeral stability.

Data:
Purpose The long head of the biceps tendon (LHBT) has been implicated as a common source of pain in the shoulder, but there is no consensus as to its effect on glenohumeral stability. The purpose of this study was to investigate the stabilizing effect of the LHBT in anterior glenoid defect models to determine if it contributes to anterior glenohumeral joint stability. Methods Twenty-four fresh-frozen cadaveric shoulders (age 60.1 ± 8.6 years) were randomized to 3 different defect groups (isolated soft-tissue Bankart lesion, 10% anterior defect, 20% anterior glenoid defect) which were mounted in a shoulder-testing system allowing 6 degrees of freedom. Glenohumeral translation was measured in the vulnerable ABER position by a 3D-digitizer as the difference between the start and end positions in the XY-plane after an anterior force was applied. Each specimen was tested under 18 conditions: 3 glenoid states (native, defect, repair), 3 anterior loads (20 N, 30 N, 40 N), and 2 LHBT tensions (0 N, 10 N). A linear mixed-effects model was generated to determine the effect of LHBT tensioning on glenohumeral stability. Results LHBT load had a statistically significant, but negligible, effect on glenohumeral translation in the anterior-posterior direction, decreasing it by 0.03 mm/N (72(1) = 5.87, p = 0.0154, 95% CI: [-0.06, -0.006]). There was no significant effect of LHBT tensioning in the superior-inferior direction. Conclusion In the context of soft tissue Bankart lesions and anterior glenoid bone defects up to 20%, load on the LHBT confers some anterior-posterior stability to the glenohumeral joint, although this effect is so small as to not be clinically significant. The LHBT does not contribute to superior-inferior stability. Consequently, biceps tenotomy or tenodesis is a viable treatment for biceps pain in the setting of concurrent instability with a low probability to increase adverse events as glenohumeral instability.

Category: Shoulder - Instability
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Summary: The predictive value of the “on-track/off-track” concept has been recently called into question by the introduction of the “Hill-Sachs interval to glenoid track width ratio” (H/G ratio), which can predict an increased risk of recurrent instability after arthroscopic Bankart repair.

Data: The predictive value of the “on-track/off-track” concept has been recently called into question by the introduction of a new threshold between peripheral and central on-track lesions: the so-called “Hill-Sachs interval to glenoid track width ratio” (H/G ratio). The aim of the present study was to analyze which pattern of bipolar lesion increases the risk of recurrent anterior gleno-humeral instability after arthroscopic Bankart repair.

Methods: A retrospective study was conducted. Patients affected by recurrent anterior gleno-humeral instability who underwent arthroscopic Bankart repair with a minimum of 12 months follow-up were included. A preoperative computed tomography (CT) scan was performed in all patients. Only patients with on-track bipolar defects were included. Subsequently, three-dimensional computer-based reconstruction of the Hill-Sachs and glenoid bone defect were performed using a dedicated software in order to obtain the H/G ratio following the formula: Hill-Sachs interval/glenoid track width. Included patients were then divided into two groups according to the H/G ratio: group 1, patients with H/G ratio < 0.7; group 2, patients with H/G ratio > 0.7. The primary outcome was recurrent instability after surgery. Secondary outcomes were: Quick-DASH, ASERs and WOSI score.

Comparison between groups was performed by use of chi-square test for categorical variables and unpaired t-test for discrete variables. Significance was set at p < 0.05. Results: The study included 36 males and 4 females. Mean age (± SD) of patients was 25.7 ± 7.6 years. Each group was composed of 20 patients. Mean follow-up in group 1 was 54.6 ± 30.68; while mean follow-up in group 2 was 51 ± 34.65. Comparison between groups did not show significant differences nor for baseline characteristics, neither at follow-up. Two recurrent instabilities occurred in group 2 (H/G ratio > 0.7) (p = 0.147). Conclusions: Although two recurrent instabilities occurred only in group two, no significant differences could be found between central and peripheral track lesions.

Category: Shoulder - Instability

Effect of Time And Contrast Use for Magnetic Resonance Imaging in Acute Anterior Shoulder Instability: Determining the Accuracy Of Labrum Tear Size

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Summary: Extent of labral tear differed between MRI and intraoperative findings after acute shoulder instability, with no statistical differences based on time of imaging or the addition of intra-articular contrast; thus, need for arthrogram MR in the setting of anterior shoulder instability should be carefully considered.

Data: INTRODUCTION: Controversy exists regarding the inclusion of intra-articular contrast; thus, need for arthrogram MR in the setting of anterior shoulder instability should be carefully considered. The ALCOT restored these values to 6.4 mm and 1.4, respectively, showing no significant difference from native. The Latarjet restored the force ratio to 1.3 (not significant from native) but failed to restore lateral translation with a value of 5.6 mm (p = 0.003 from Native, not significantly different from the labral tear).

DISCUSSION: The ALCOT is a novel surgical technique for labral reconstruction that can be considered as a treatment option for anterior instability in the setting of a labral tear size between MRI and surgical findings at every half hour was recorded. Days from injury to MR was further categorized as acute (0 to 7 days) or delayed (>7 days). RESULTS: Thirty-nine patients (mean age 24.5 years) met inclusion criteria. Median time from injury to MRI and surgery was 9 and 45 days, respectively. 16 patients underwent non-arthrogram MR (8 acute, 8 delayed) with 23 patients underwent arthrogram MR (6 acute, 17 delayed). The entire cohort demonstrated a mean of 4.7 half-hour labral tear size differences between MR and intraoperative findings. No statistical difference was identified for labral tear size differences between non-arthrogram MR (3.3) and arthrogram MR (5.7, p = 0.83). ANOVA testing demonstrated no difference in labral tear size detected (p = 0.2116) based on number of days from injury to MR. DISCUSSION: Extent of labral tear differed between MRI and intraoperative findings after acute shoulder instability, with no statistical differences based on time of imaging or the addition of intra-articular contrast. The additional cost, time, and morbidity of arthrogram MR should be weighed in the setting of anterior shoulder instability.

Category: Shoulder - Instability

The Anterior Labral Circumferential Onlay Technique (Alcot) Serves to Reconstruct the Anterior Labrum and Biomechanically Restores Anterior Glenohumeral Joint Stability

Abstract ID# 22894
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Summary: This study evaluates the effectiveness of ALCOT compared to Latarjet in the setting of anterior instability with a deficient labrum. It proposes, and biomechanically validates, a novel surgical technique for labral reconstruction that may be used by surgeons to treat patients with anterior instability.

Data: INTRODUCTION: Labral reconstruction has been proposed as an alternative for anterior instability. A new technique called Anterior Labral Circumferential Onlay Technique (ALCOT) was developed, which reconstructs the labrum using the long head of the biceps tendon (LHBT). The purpose of this study was to biomechanically evaluate the efficacy of the ALCOT to stabilize the shoulder joint against anterior dislocation in the setting of a deficient labrum with no glenoid bone loss. METHODS: Ten fresh-frozen cadaveric shoulders were tested in 5 consecutive states using a 6-degrees-of-freedom robotic arm: (1) Native, (2) Capsular Repair, (3) Labral Tear (4) ALCOT (5) Latarjet. For the ALCOT, the biceps tendon was shortened at the distal portion and pulled into the joint. Three knotsless all suture anchors were placed at 3, 4:30 and 6 o’clock position on the glenoid rim, and the biceps tendon was secured with suture anchors using mattress stitches to the anterior rim of the glenoid. In the native state, each specimen underwent an initial test to determine the appropriate amount of anterior and inferior displacement for future tests. In this test, a 50N compressive load was maintained while an 80N force was applied in the sagittal plane at a 45° angle between the anterior and inferior axes. The corresponding anterior and inferior displacements were recorded. Then, in each state including native, a dislocation test was performed. In this test, a 50N compressive load was maintained while the joint was driven in position control to the previously recorded positions on the anterior and inferior axes. The amount of force needed to displace the shoulder and the lateral displacement of the humeral head were recorded throughout the motion. Higher lateral translation was considered more stable, because it corresponded to a larger obstacle to overcome during the dislocation. RESULTS: No significant differences were found between the native and capsular repair states. Compared to native, the labral tear significantly decreased the lateral translation of the humeral head during dislocation from 6.5mm to 5.4mm (p < 0.001) and decreased the force ratio from 1.8 to 1.1 (p = 0.002), corresponding to a decrease from 90N to 55N at 50N of compressive load. The ALCOT restored these values to 6.4 mm and 1.4, respectively, showing no significant difference from native. The Latarjet restored the force ratio to 1.3 (not significant from native) but failed to restore lateral translation with a value of 5.6 mm (p = 0.003 from Native, not significantly different from the labral tear).

DISCUSSION: The ALCOT is a novel technique for labral reconstruction that can be considered as a treatment option for anterior instability in the setting of a labral tear.