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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:
Background: 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 than 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, ASIS 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 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 46 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 = 0.083). 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

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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 knotless 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 6.4mm 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
deficient labrum. Compared to the Latarjet technique, the ALCOT involves less morbidity and represents a more anatomic glenoid surface by replacing the labrum without changing the bony morphology. In this study, the ALCOT also showed superior stabilization by restoring native force ratio and lateral humerus translation. Further research is necessary to clinically validate this technique, and possibly to expand indications to small degrees of glenoid bone loss.

Category: Shoulder - Instability

Interobserver Variability of Glenoid Bone Loss Measurement

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Summary:
Glenoid bone loss measured with a linear method is easy, reproducible and has excellent interobserver agreement.

Data:
Introduction Glenoid bone loss is associated with anterior shoulder instability and is considered an independent risk factor for arthroscopic capsulolabral repair failure. Therefore, quantitative analysis and accurate measurement are important to determine proper surgical treatment. The aim of the study was to assess interobserver variability of linear method for glenoid bone loss quantification. Methods: Thirty patients with shoulder instability and CT scans were included. Images were processed in multiplanar reconstruction (MPR) to provide an en face view of the glenoid Linear measurement applying the perfect circle method was performed. Each measurement was performed by four observers with a standardized measurement protocol. Interobserver reliability were analyzed using intraclass correlation coefficients (ICCs), 95% confidence intervals (CIs) Results: Mean values and standard deviation (± SD) of glenoid bone loss were 16.7% ± 9.4 (range 0–36.2); 15.8% ± 9.2 (range 0–37); 15.7% ± 8.2 (range 1.3–35.7); and 16.5% ± 9.9 (range 1.5–38.1) for observer number 1, 2, 3 and 4 respectively, with no significant differences (p=0.96). Interobserver reliability showed ICC values from 0.86 to 0.95. Conclusions: This study showed that glenoid bone loss measured with a linear method is easy, reproducible and has excellent interobserver agreement.