Abstracts

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Summary:
Following arthroscopic Bankart repair, female and male athletes have similar clinical, return to sports, recurrence, and revision outcomes. Data:
Abstract Purpose: To compare return to sports, functional outcomes, and recurrences rates between female and male athletes following arthroscopic Bankart repair (ABR). Methods: A retrospective comparative study was performed between male and female who underwent an ABR between January 2008 and December 2019. Sports practiced primarily by men in our practice (including rugby, soccer, boxing and martial arts) were excluded. Functional outcomes included the Rowe score, visual analogue scale (VAS) for pain, and shoulder-dependent sports ability measured with the Athletic Shoulder Outcome Scoring System (ASOSS). Return to sport, recurrence, and revisions were evaluated. Additionally, we assessed the period (months) between surgery and recurrence events. Results: A total of 58 female and 106 male patients were available for analysis at a median follow-up of 60 (QRR 36-84) months. Ninety-one percent of the patients (n=150) returned to sports and 84% (n=126) returned to their pre-injury level at a median of 6 months (IQR 5-8) postoperative. There were no differences in the rate of return to sports between females and males (91 vs. 92% respectively, p = 0.997). There were no differences between the groups regarding postoperative functional outcomes, with the majority of patients achieving the minimal clinically significant difference (ROWE: 98% female and 99% male p = 0.584; ASOSS: 100% female and 99% male p = 0.646). The overall recurrence rate was 9.7 % (n=16), with a rate of 10.3 % (n=6) in female and 9.4% (n=10) in male athletes (p = 0.851). Time to event analysis showed that the median time to recurrence was 48 months in both groups (p = 0.848). The overall revision rate was 3% (n=4), without significant differences between groups (p = 0.556). Conclusion: When compared within similar sports, there does not appear to be sex-related differences in functional outcomes, recurrence, or return to play following ABR.

Category: Shoulder - Instability

All-Arthroscopic All-Suture Anchor Dynamic Anterior Stabilization for the Treatment of Anterior Glenohumeral Instability Produces Good Clinical Outcomes and Successful Healing At A Minimum 1 Year of Follow-Up

Abstract ID# 22055
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Summary:
The onlay modification of the dynamic anterior stabilization utilizing the all-arthroscopic method of fixation of the long head of the biceps tendon (LHB) with all-suture anchors and the double double-pulley technique produces good clinical results and successful healing of the LHB and is safe for the treatment of anterior glenohumeral instability with less than 20% GBL at 1-year minimum follow-up
Data:
Background: The dynamic anterior stabilization (DAS) with the long head of the biceps tendon (LHB) is a new arthroscopic soft-tissue procedure for the treatment of anterior glenohumeral instability with limited to subcritical glenoid bone loss (GBL). Few studies have reported the results of different arthroscopic methods of transposing and fixing the LHB tendon to the anterior glenoid rim. The purpose of the current study was to report the results of the onlay DAS for the treatment of anterior glenohumeral instability with less than 20% GBL. The hypothesis was that the onlay modification of the DAS that utilizes the all-arthroscopic method of fixation of the LHB with all-suture anchors and the double double-pulley (DDP) technique would produce good clinical results and successful healing of the transposed LHB and would be safe for the treatment of anterior glenohumeral instability with less than 20% GBL. Methods: From 2018 to 2021, patients with anterior glenohumeral instability and less than 20% GBL were enrolled in a prospective study on DAS and followed-up to 48 months. The primary outcomes were: Western Ontario Shoulder Instability Index (WOSI), Rowe score, range of motion, strength. The secondary outcomes were ability to return to play (RTP), RTP at same level, lack of recurrence of instability, successful LHB healing, and lack of complications. Magnetic resonance imaging (MRI) was used to measure GBL, Hill-Sachs interval, glenoid track, and assess LHB integrity. Results: Eighteen consecutive patients underwent the DAS. Fifteen patients had a minimum follow-up of 12 months (mean, 23.93 ± 13.67 months). 12 were male, 3 female; 73.3% practiced recreational sports; mean age at surgery, 23.40 ± 6.53 years; mean number of dislocation episodes, 10.13 ± 8.42; mean GBL, 8.21±7.39% (range, 0–20.24%); mean Hill-Sachs interval, 15.00 ± 2.96mm; mean glenoid track, 18.87 ± 2.57mm; mean Beighton score, 1.13 ± 2.80 points; 33.3% had a concomitant SLAP lesion type I or II. The mean improvement in the WOSI and Rowe score (959.27 ± 386.70 and 74.00 ± 22.22 points) was significant (p<0.001 and p<0.001) and more than 6 and 7 times higher than the minimum clinically important difference, respectively. The mean improvement in active elevation, abduction, external and internal rotation, and strength (23.00±27.76, 33.33±43.78, 8.33±13.58, 0.79±1.28 points, and 1.89 ± 3.11 kg) was significant (p<0.006, p<0.011, p<0.032, p<0.044, and p<0.034). RTP rate was 93.33%. RTP at same level was 60.00%. One severely hyperlax patient (Beighton 8) had an atraumatic redislocation episode at 8 months postoperatively. Therefore, the recurrence rate of anterior instability in the overall group was 6.7%. No complications were reported in the overall group. The MRI of each patient showed successful LHB healing to the glenoid bone at a mean follow-up period of 9.36 ± 5.66 M (range, 6.02 – 25.35 M). Conclusions: The onlay modification of the DAS using the LHB and the DDP technique produces significant and clinically important improvements in shoulder function, successful LHB healing, and is safe for the treatment of anterior glenohumeral instability with less than 20% GBL, with or without SLAP lesions, without severe hyperlaxity.

Category: Shoulder - Instability

Arthroscopic SLAP Repair and Biceps Tenodesis Combined with Anterior Labral Repair for Type V SLAP Lesions Both Yield Excellent Outcomes in Active-Duty Military Patients

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Summary:
Both arthroscopic SLAP repair and combined arthroscopic-assisted subpectoral biceps tenodesis and anterior labral repair led to statistically and clinically significant increases in outcome scores, marked improvement in pain, and high rates of return to unrestricted- active duty in military patients with type V SLAP lesions
Data:
Background: Superior labrum anterior posterior (SLAP) lesions and anterior instability are common causes of shoulder pain and dysfunction among active-duty members of the US military. However, little data has been published regarding the surgical management of type V SLAP lesions. Purpose To compare the outcomes of arthroscopic SLAP repair with those of combined arthroscopic-assisted subpectoral biceps tenodesis and anterior labral repair for type V SLAP tears in active-duty military patients younger than 35. Study Design Cohort, Level III Methods All consecutive patients from January 2010 to December 2015 who underwent arthroscopic repair or combined biceps tenodesis and labral repair of a type V SLAP lesion with minimum 5 years follow up were identified. Outcome measures including the visual analog scale (VAS), the Single Assessment Numeric Evaluation (SANE), and the American Shoulder and Elbow Surgeons (ASES) shoulder score were administered pre- and post-operatively and scores were compared between groups. Results Eighty-four patients met inclusion criteria for the study. All patients were active-duty military at the time of surgery. Average follow-up was 102.59 +/- 20.98 months in the repair group and 94.50 +/- 27.11 months in the tenodesis group (p = 0.1281). There were no significant differences in preoperative range of motion or outcome scores between groups. Both groups experienced statistically significant improvements in outcome scores postoperatively (p<0.0001 for all), however, tenodesis patients reported significantly better VAS (2.52 +/- 2.36 vs 1.50 +/- 1.91, p = 0.0326), SANE (86.82 +/- 11.00 vs 93.43 +/- 8.81, p = 0.0034), and ASES (83.32 +/- 15.31 vs 89.90 +/- 13.31, p = 0.0394) scores. With regard to clinical significance, the number of patients who achieved the minimal clinically important difference (MCID), substantial clinical benefit (SCB), and patient
acceptable symptom state (PASS) for the ASES and SANE did not differ significantly between groups. Thirty-four of patients in both cohorts returned to preinjury levels of work (77.27% vs 85.00%, p = 0.3677). Thirty-two (72.72%) repair patients and 33 (82.50%) of tenodesis patients returned to preinjury levels of sporting activity (p = 0.2850). There were no significant differences in the rates of medical discharge, failure of repair, or revision procedures between groups (p = 0.2019, p = 0.0624, p = 0.9923). Conclusion Both arthroscopic SLAP repair and combined arthroscopic-assisted subpectoral biceps tenodesis and anterior labral repair led to statistically and clinically significant increases in outcome scores, marked improvement in pain, and high rates of return to unrestricted-active duty in military patients with type V SLAP lesions. The results of this study suggest that both procedures represent appropriate treatment options for the surgical management of this injury.

Category: Shoulder - Instability

How Does a Standardized Dynamic Arthroscopic Engagement Test Compare with Radiological Glenoid Track Method for Identification of On- and Off-Track Hill-Sach’s Lesion

Abstract ID# 22668
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Summary:
A dynamic arthroscopic engagement test performed in a standardized manner (DASE test) is highly reliable with near-perfect interobserver agreement for classification of Hill-Sach’s lesions. In contrast, radiological method was less reliable and showed greater interobserver variability. Incorporating DASE test in current algorithms may help reduce variability in surgical decision-making.

Data:
Purpose Radiological classification of glenohumeral bone defects into “on-track”, and “off-track” morphology has high inter-observer and intra-observer variability, and this may influence choice of surgical procedure. The purpose of this study was to assess the reliability, reproducibility, and diagnostic validity of a dynamic arthroscopic standardized engagement test (DASE) in comparison with the current gold-standard radiological track measurement method for identification of on/off-track bony lesions in patients with anteroinferior instability.

Methods: Between January 2018 and 2022, 114 patients who presented with traumatic anterior shoulder instability were evaluated clinically and radiologically (MRI and/or CT scan) and Hill-Sach’s lesions (HSL) were classified as on-track or off-track, and peripheral-track (HSO by) as two independent researchers. During arthroscopy, a standardized method of evaluation (Dynamic Arthroscopic Standardized Engagement [DASE] test) was used to classify defects into on-track, peripheral-track, and off-track lesions by two experienced shoulder surgeons, and the interpretation was documented independently. Interobserver reliability for DASE test and radiological (HSO) method classification was calculated using Kappa statistics and reported as percent agreement along with 95% confidence intervals. Diagnostic validity (sensitivity, specificity, positive predictive value, and negative predictive value) of DASE test was calculated using the radiological (HSO%) track as a gold standard. Results Radiologically measured mean glenoid bone loss (GLO), Hill-Sachs interval (HSI) and Hill-Sach’s occupancy (HSO% for off-track lesions were lower in the arthroscopically classified off-track lesions (DASE test) as compared with the radiological method. The arthroscopic method showed a near-perfect agreement between the 2 observers for the on-off track classification system (κ=0.96, p<0.001) as well as for the on-off-peripheral track classification (κ=0.88, p<0.001). The radiological method showed greater interobserver variability (0.31, 0.24) with only fair agreement for both classification systems. Inter-method agreement varied between 71% and 79% (CI 62-86%) between the 2 observers, and reliability was assessed as only slight to fair agreement (κ=0.38, 0.16). Overall, the DASE test showed maximum specificity (81%, 78%) for diagnosis of an off-track lesion by both observers when radiological peripheral-track lesions (HSO% 75-100) were considered as off-track lesions. Similarly, the DASE test demonstrated maximum sensitivity when arthroscopic peripheral track lesions were classified as off-track lesions.

Conclusion: The DASE test showed a near-perfect interobserver agreement for lesion classification and the radiological method demonstrated greater variability and less reliability. Clinical relevance: Incorporating the DASE test in current treatment algorithms may help reduce variability in score-based algorithms for decision-making in anterior shoulder instability. Level of evidence: Level 1 Diagnostic Keywords: Instability; Bone defect; glenoid track; Hill-Sachs lesion; Arthroscopy; engaging Hill-Sach’s lesion.

Category: Shoulder - Instability

Inferior Hill-Sachs Position Predicts Failure Following Primary Bankart Repair for On-Track Lesions

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Summary:
An inferiorly-based Hill-Sachs lesion represents a higher risk lesion as compared to superiorly-based lesions for recurrent instability following Bankart repair.

Data: Background: the on-track/off-track concept for shoulder instability primarily describes the medial-lateral rotational relationship between an engaging Hill-Sachs lesion and a Bankart defect. Though clinically more protective, on-track lesions retain some risk for failure following primary arthroscopic Bankart repair. While some of this risk can be explained by the “near-track” concept, the role of the superior-inferior position of the Hill-Sachs lesion has never been studied in the context of failure of primary Bankart repair. This study aims to identify the relationship between the superior-inferior position of a Hill-Sachs lesion and risk for failure following primary arthroscopic Bankart repair. Our hypothesis is that inferiorly-based Hill-Sachs lesions may engage with the arm in neutral and thus be higher risk for failure following primary Bankart repair.

Methods: We performed a retrospective analysis of 201 individuals with on-track lesions who underwent primary arthroscopic Bankart repair between 2007 and 2019 who have minimum 2 year follow-up. Patients with failure were defined as those who sustained a dislocation or subluxation after the index procedure. A pre-operative sagittal MRI cut showing the maximum Hill-Sachs diameter was used for position analysis. Sagittal position of the Hill-Sachs was defined the angle formed by the Hill-Sachs bisecting line through the humeral head center, against the mid-humeral axis on a sagittal MRI cut; An angle of 0 is twelve o’clock on the humeral head, while an angle of 90 is equatorial. We defined a priori four Hill-Sachs quadrants for semi-quantitative analysis, based on physiologic arm positions: Superior (angle < 40), Mid-Superior (40-60), Mid (61-90), and Inferior (>90). Hill-Sachs quadrants were then correlated against failure following primary arthroscopic Bankart repair. Results: Failure rates following arthroscopic bankart repair as it relates to superior-inferior position of the Hill-Sachs lesion is as follows: No Hill-Sachs (10 of 73, 13.7%), Superior (0 of 7, 0%), mid-superior (6 of 36, 16.7%), Mid (19 of 71, 26.8%), and Inferior (1 of 6, 16.7%). We grouped Hill-Sachs lesions into low grade (No Hill-Sachs, Superior, and Mid-Superior quadrants) and high grade (Mid, and Inferior quadrants). Low grade represented a 13.8% risk of failure, while High grade represented a 26% risk for failure (p=0.034). Receiver Operating Characteristic (ROC) analysis demonstrates a Youden Index of 66 degrees as optimal cut-off for high-risk Hill-Sachs. Conclusion: The superior-inferior sagittal position of a Hill-Sachs lesion may contribute to risk for failure of primary arthroscopic Bankart repair for on-track lesions. Inferiorly-based Hill-Sachs lesions may risk engagement at lower degrees of arm abduction, and in our study represent nearly double the risk of failure of arthroscopic Bankart repair as compared to superior Hill-Sachs positions.

Category: Shoulder - Instability

Capsuloligamentous Laxity Predicts Failure Following Arthroscopic Anterior Bankart Repair

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