



Concomitant Glenolabral Articular Disruption (GLAD) Lesion is Not Associated With Inferior Clinical Outcomes After Arthroscopic Bankart Repair for Shoulder Instability: A Retrospective Comparative Study

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Purpose: The purpose of this study was to compare outcomes between anterior shoulder instability patients with and without glenolabral articular disruption (GLAD) lesions after undergoing arthroscopic Bankart repair and to evaluate potential risk factors for inferior outcomes and recurrent instability. **Methods:** Prospectively collected data were retrospectively reviewed for patients who underwent arthroscopic Bankart repair with and without GLAD lesions at a minimum of 2 years follow-up. Consecutive patients were matched by age, sex, and number of anchors. Patient-reported outcomes (PROs) were evaluated before and after surgery, including American Shoulder and Elbow Surgeons, Single Assessment Numeric Evaluation, Quick Disabilities of the Arm, Shoulder and Hand, Short Form-12 score, and satisfaction. Recurrent dislocation, subjective instability, and reoperation were analyzed. Additionally, PROs were assessed on the basis of GLAD lesion characteristics. **Results:** A total of 54 patients (27 GLAD, 27 control) with a mean age of 28.9 ± 11.6 years were analyzed at mean 4.5 ± 1.9 years (range, 2-9 years) follow-up. Thirty-eight (70.3%) of the participants were male. Patients in both groups experienced significant improvements in all PROs ($P \leq .006$ for all measures) and reported high median satisfaction (scale 1-10: 10 vs 10, $P = .290$) at final follow-up. Two patients in the GLAD cohort and 1 in the control cohort underwent reoperation ($P = .588$). Four (14.8%) patients in each group reported recurrent dislocation ($P = 1.0$). Additionally, 2 (7.4%) GLAD patients and 1 (3.7%) control patient reported subjective shoulder instability after surgery ($P = 1.0$). No significant differences in PROs were observed based on anchor/labral advancement or treatment with microfracture, nor were significant correlations observed between GLAD lesion size and PROs ($P > .05$ for all). **Conclusion:** Arthroscopic Bankart repair in patients with GLAD lesions resulted in significantly improved outcomes with high satisfaction, which was no different when compared with those without GLAD lesions. **Level of Evidence:** Level III, retrospective comparative study.

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Anterior shoulder instability is a common pathology, particularly in young active populations.¹⁻⁴ As many as 84% of patients evaluated for anterior shoulder instability have an associated glenolabral injury.⁴ The classically described Bankart lesion is most common. However, various concomitant pathology can arise concurrently or in lieu, including anterior labroligamentous periosteal sleeve avulsion, humeral avulsion of the glenohumeral ligament, and glenolabral articular disruption (GLAD) lesions. GLAD lesions are relatively rare, with a reported incidence of 2% in patients with anterior instability.⁵ Despite occurring less frequently, these lesions are important to identify because they may predispose to an increased risk of postoperative failure after arthroscopic stabilization surgery.⁶

GLAD lesions were first described by Neviaser⁷ in 1993 as a tear of the anteroinferior labrum that is accompanied by an adjacent glenoid articular flap tear, which may extend down to the subchondral bone (Fig 1A). The original definition attributed the development of GLAD lesions to adduction trauma without instability⁷; however, numerous authors have since described articular lesions in the setting of instability after acute trauma with dislocation.^{6,8-11} Recently, Pogorzelski et al.⁶ observed an association between the presence of GLAD lesions and an increased rate of clinical failure in patients who underwent arthroscopic Bankart repair, suggesting that GLAD lesions may impact overall prognosis in cases of anterior shoulder instability.

There remains a paucity of literature regarding the patient-reported clinical outcomes of patients after arthroscopic stabilization surgery for anterior shoulder instability with concomitant GLAD lesions. Therefore the purpose of this study was to compare outcomes between anterior shoulder instability patients with and without GLAD lesions after undergoing arthroscopic Bankart repair and to evaluate potential risk factors for inferior outcomes and recurrent instability. It was hypothesized that postsurgical patient-reported outcomes (PROs) would improve similarly between groups compared to before surgery; however, patients with GLAD lesions would experience an increased rate of reoperation and recurrent instability after arthroscopic stabilization surgery, and increasing GLAD lesion size would be associated with inferior PROs.

Methods

This study was a retrospective, comparative study of prospectively collected data stored in an institutional database that was conducted under the approval of, and in concordance with Institutional Review Board policies (#2019-20). Patients age 15 to 60 who were diagnosed with primary or recurrent anterior shoulder instability

and subsequently underwent Bankart repair with concomitant GLAD lesion by the senior surgeon between January 2006 and December 2017 and had a minimum of 2 years of postsurgical follow-up were included. All GLAD lesions were confirmed during surgery with diagnostic arthroscopy. Additionally, patients who required secondary procedures including SLAP repair or biceps tenodesis were included. To prevent confounding outcome assessment, patients who underwent concomitant bony Bankart repair, rotator cuff repair, acromioclavicular joint reconstruction, coracoid transfer (Latarjet), or other procedures unrelated to instability were excluded. Additionally, patients with a history of multidirectional instability and those who presented with posterior labral injury/posterior GLAD lesions were excluded. Consecutive patients who underwent arthroscopic Bankart surgery with GLAD lesions were matched by age, sex, and number of anchors to patients without GLAD lesions who underwent arthroscopic Bankart repair only (control) in a 1-to-1 format.

Surgical Technique

All described surgical procedures were performed with the patient in the beach chair position and under general anesthesia with additional interscalene nerve block. The operative extremity was positioned during surgery with a pneumatic arm holder. In each case an examination with the patient under anesthesia was performed to assess the degree of anterior, posterior, and inferior instability. The senior surgeon's preferred arthroscopic Bankart repair technique in the setting of GLAD lesions has been previously described.⁶ Diagnostic arthroscopy was performed after a standard posterior portal was established while a combination of 30° and 70° arthroscopes were used as needed throughout the case. Subsequently, standard anterosuperior and anteroinferior portals were established under direct visualization, with insertion of 5.0-mm and 8.25-mm cannulas, respectively. Arthroscopic elevator instruments and hooked electrocautery devices were used to elevate the capsulolabral complex back to an anatomic resting position before refixation. An arthroscopic shaver was used to prepare the anterior glenoid rim to promote capsule-to-bone healing while preserving bone stock. In cases involving a Bankart lesion only, an arthroscopic repair was performed using suture anchors, placing the first anchor at approximately the 5:30 clock-face position (right shoulder) or 6:30 clock-face position (left shoulder). Subsequent anchors were then placed from inferior to superior as needed depending on the size of the lesion, to achieve anatomic labral reduction and fixation. In cases in which a concomitant SLAP tear was identified, 2 additional suture anchors were used for repair.¹²

In cases involving a GLAD lesion, a curette or arthroscopic shaver was used to extensively debride the

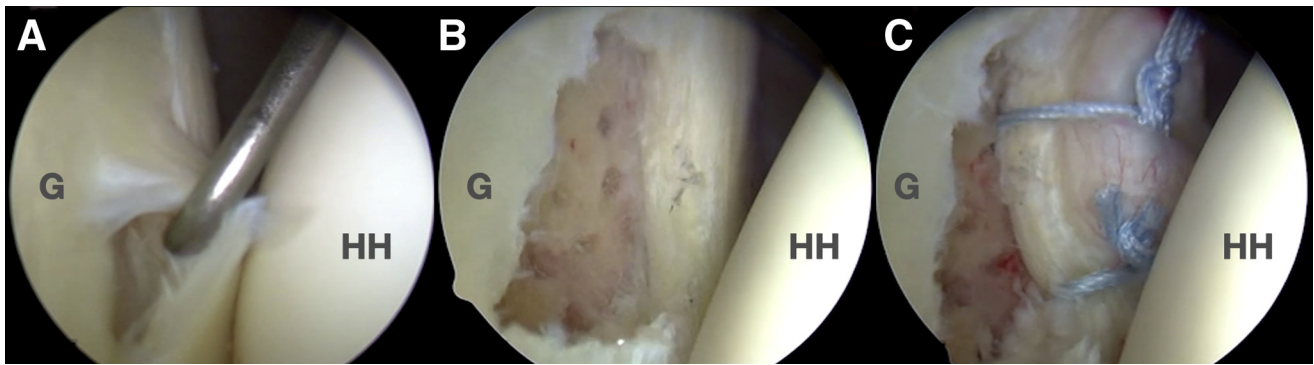


Fig 1. Arthroscopic visualization of a right shoulder showing (A) the cartilage flap of a large glenolabral articular disruption (GLAD) lesion being elevated with a probe during diagnostic arthroscopy. The cartilage flap was removed and (B) microfracture was performed using a microdrill to penetrate the subchondral bone plate multiple times (spaced every 3 to 4 mm) to stimulate the bone marrow and promote cartilage regeneration. The (C) anterior labrum was then advanced into the cartilage defect during fixation to effectively decrease its surface area. G, glenoid; HH, humeral head.

glenoid cartilage defect. Larger lesions were treated with microfracture using a PowerPick device (Arthrex, Naples, FL), which involved penetrating the subchondral bone plate multiple times spaced every 3 to 4 mm to stimulate the bone marrow and promote cartilage regeneration (Fig 1B). Additionally, incorporation and advancement of the labrum into the cartilage defect during fixation was performed when necessary to effectively decrease the surface area of larger defects (Fig 1C). Mobilization of the labrum to allow a tensionless repair is essential, which sometimes required elevation until the fibers of the subscapularis were visualized. In cases found to have significant fraying or a high-grade tear of the long head biceps tendon, a tenotomy was performed with subsequent subpectoral biceps tenodesis.

Postoperative Rehabilitation

Postoperative rehabilitation consisted of the patient's arm being placed in a sling for 4 weeks. Gentle passive shoulder range of motion limited to 30° of external rotation was begun immediately on postoperative day 1. At 4 weeks, active-assisted range of motion was begun and was gradually progressed to achieve full range of motion. Open chain strengthening commenced at approximately 6 weeks. Full return to activity occurred once full and pain-free motion was obtained, typically around 4 to 6 months after surgery.

Data Collection

Demographic variables, including age, sex, number of prior instability surgical procedures, interval from injury to index surgery, and dominant extremity injury were collected. Intraoperative data, including additional glenohumeral pathology, concomitant procedures, and treatment characteristics, including microfracture and anchor/labral advancement into defect, were also collected. The aforementioned metrics were compared

between groups. GLAD lesion size was assessed using previously described methodology.⁶⁻¹³ This was performed by 2 sports medicine fellowship-trained orthopaedic surgeons (J.W.A., J.J.R.). GLAD lesion area was determined on preoperative magnetic resonance imaging using the axial and coronal sequences to identify and measure the GLAD lesion in its greatest dimension. The greatest dimension measured on each respective sequence were multiplied together to determine area footprint. The previously described method by Gyftopoulos et al.¹⁴ was used to calculate glenoid bone loss and assess on-versus off-track Hill-Sachs lesions.

Outcome Assessment

PROs were evaluated before and after surgery, including the American Shoulder and Elbow Surgeons (100 = best score) score,¹⁵ Single Assessment Numerical Evaluation (100 = best score) score,¹⁶ Quick Disabilities of the Arm, Shoulder and Hand (QuickDASH; 0 = best score) score,¹⁷ Short Form-12 Physical Component (higher scores correspond with better health)¹⁸ score, and patient satisfaction (scale 0-10; 0 = very unsatisfied, 10 = very satisfied). Of note, Single Assessment Numerical Evaluation and QuickDASH scores were not routinely collected at our institution before 2010; therefore analysis for patients with surgery dates prior to this timepoint were limited to postoperative scores only. Recurrent instability, defined as recurrent dislocation, and reoperations were evaluated. Other surgical complications were also collected. Additionally, patients were asked to report subjective shoulder stability based on experienced feelings of their shoulder "going out" (never, rarely, occasionally, frequently). For purpose of analysis, patients who reported symptoms "occasionally" or "frequently" were considered positive for postoperative subjective shoulder instability. Outcome scores were assessed based on

GLAD lesion morphology and surgical treatment, including anchor/labral advancement (in the defect vs outside the defect) and microfracture (performed vs not performed).

Subjective evaluations were completed via email questionnaires that were administered before surgery and at final follow-up. Patients who did not return their questionnaires via email were contacted by telephone and encouraged to complete the electronic assessment. All patients who were contacted by study personnel were 18 years of age or older at time of follow-up, and no assessments were conducted over the telephone.

Statistical Analysis

Statistical analyses were performed using SPSS version 11.0 (IBM Corp), and the statistical package R Version 4.0.0¹⁹ (R development Core Team; with additional packages *psy*²⁰ and *boot*²¹) was used to complete reliability analysis. Bivariate statistical techniques were used to evaluate group comparisons between GLAD and the control group. Univariate analyses were performed using an independent *t*-test for normally distributed variables. Mann-Whitney or Fisher's exact tests were performed for data that were not normally distributed or for bivariate comparisons. The χ^2 analysis was used for testing the relationships between categorical variables. Wilcoxon signed ranks tests were used to detect differences between preoperative and postoperative variables. Spearman's rho correlations were performed to assess the strength of associations between GLAD lesion size, Hill-Sachs lesion size, glenoid bone loss, and postoperative PROs. Interrater and intrarater reliability for the height and width of GLAD lesion measurements were assessed using the intraclass correlation coefficient (ICC). In each case a 2-way random-effects model was used to calculate the single measures, absolute agreement version of the ICC. Ninety-five percent bias-corrected and accelerated confidence intervals were derived using a bootstrap resampling method. To better understand the measurement repeatability in the context of the units of clinical measurement, Bland-Altman analysis was performed, and average bias was reported along with the 95% limits of agreement. Statistical significance was defined as $P < .05$.

Results

Study Population

A total of 61 patients with an associated GLAD lesion underwent shoulder stabilization surgery by the senior surgeon (P.J.M.) between January 2006 and December 2017 and were minimum 2-years postoperative. Thirty-three patients were ineligible for study inclusion based on the aforementioned exclusion criteria, leaving 28 patients with GLAD lesions

who underwent Bankart repair eligible for final follow-up (Fig 2). One patient refused to participate in research before study commencement and was excluded from analysis, resulting in a GLAD cohort of 27 patients who were matched based on age, sex, and anchor number to a cohort of 163 potential controls (those who underwent Bankart only during the study period). A total of 54 patients (27 GLAD, 27 Bankart only) with a mean age of 28.9 ± 11.6 years were analyzed at mean 4.5 ± 1.9 years (range, 2-9 years) status post index surgery. Thirty-eight (70.3%) of the participants were male. Preoperative patient demographic details and surgical characteristics are summarized in Table 1. There were no significant differences in the number of prior instability surgeries, interval from injury to index surgery, or dominant shoulder involvement between groups ($P > .05$). Bone loss, Hill-Sachs lesion size, and on- versus off-track status are summarized in Table 2. No significant differences in concomitant procedures, bone loss, Hill-Sachs lesion size, or Hill-Sachs status were observed between groups ($P > .05$).

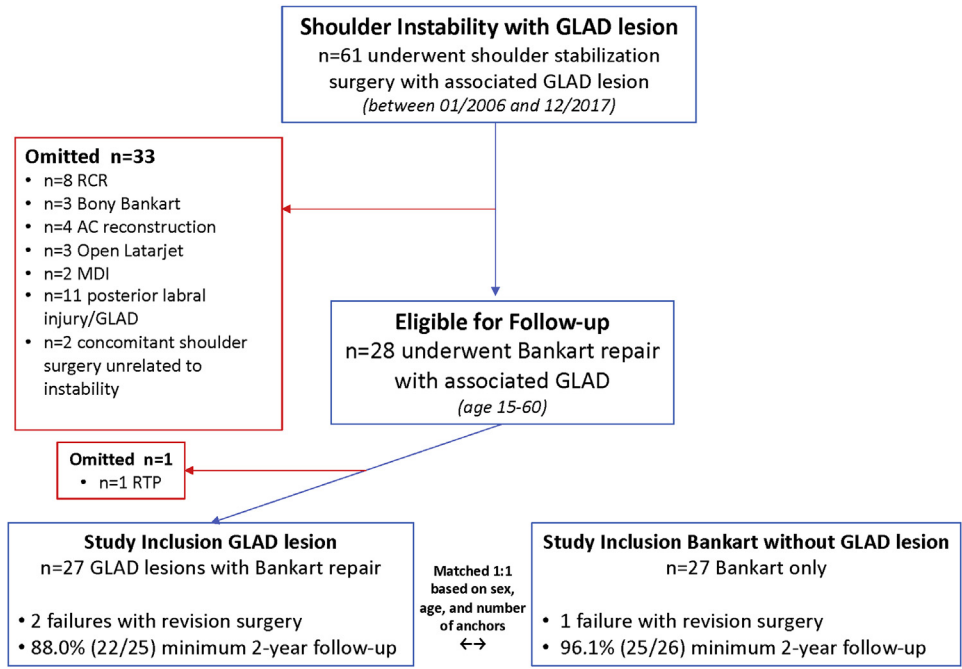
Outcome Assessment

Minimum 2-year follow-up was obtained for 22 (88.0%) and 25 (96.1%) patients in the GLAD and control groups, respectively (Fig 1). Patients in both groups experienced significant improvements from pre- to postoperative in all outcome scores ($P \leq .006$ for all measures). Postoperative PROs improved similarly in both GLAD and control groups with no significant differences noted at final follow-up between groups ($P > .05$ for all measures) (Table 3). Similarly, no significant differences were observed in median patient satisfaction (10 vs 10, $P = .290$) at final follow-up.

Recurrence and Complications

Four (14.8%) patients in each group reported recurrent dislocation postoperatively ($P = 1.0$). Two patients (7.4%) in the GLAD group ($n = 1$, occasionally; $n = 1$, frequently) and 1 (3.7%) patient in the control group ($n = 1$, occasionally) reported subjective feelings of shoulder instability after surgery ($P = 1.0$). Two patients in the GLAD cohort underwent reoperation: one underwent revision anterior capsulorrhaphy with subacromial decompression and subpectoral biceps tenodesis by the senior surgeon at 1 year after surgery for recurrent anterior shoulder pain without gross instability and the other reported undergoing revision surgery at an outside facility for symptoms of instability at 1.5 years after surgery. Notably, the first aforementioned GLAD patient requiring reoperation was primarily treated without microfracture nor labral advancement and the second was treated with labral advancement, but without microfracture. One patient in the control group also reported undergoing

Fig 2. CONSORT (Consolidated Standards of Reporting Trials) flow diagram summarizing the inclusion and exclusion of subjects. GLAD, glenolabral articular disruption lesion; RCR, rotator cuff repair; AC, acromioclavicular joint; MDI, multidirectional instability.



additional shoulder surgery for symptoms of instability at an outside facility; however, procedure type is unknown. No statistical differences in reoperation rates were observed between groups ($P = .588$). No other intraoperative or perioperative complications were noted in this series.

Risk Factors

Subgroup analysis of patients with GLAD lesions demonstrated that postoperative PROs were not significantly impacted by anchor/labral advancement into the defect or treatment with microfracture ($P > .05$

for all). Statistical analysis comparing postoperative PROs based on lesion thickness (full vs. partial) was not pursued because of a large proportion of patients with partial-thickness lesions that were lost-to-follow-up—PROs available for 1 of 6 patients in subgroup. Additionally, there were very weak correlations observed between PROs and GLAD lesion size, none of which were statistically significant ($P > .05$ for all). Bone loss and Hill-Sachs lesion size were not significantly correlated with PROs ($P > .05$). Associations between PROs and GLAD lesion characteristics are summarized in Table 4.

Table 1. Patient Preoperative Demographics and Surgical Characteristics*

	GLAD Group	Control Group	P Value
No. of patients	27	27	—
Mean age at time of surgery, yr (range)	29.4 (15.3-53.1)	28.3 (15.4-57.6)	.820
Male sex	19 (70.3)	19 (70.3)	1.0
Dominant extremity involvement	24 (88.9)	23 (85.1)	1.0
Previous instability surgery on index shoulder	1 (3.7)	4 (14.8)	.588
Mean interval from injury to surgery, days (range)	933 (3-7300)	386 (4-3138)	.298
SLAP repair	10 (37.0)	12 (44.4)	.583
Biceps tenodesis	6 (22.2)	7 (25.9)	.752
Mean no. of anchors (range)	4 (2-6)	4 (2-6)	.607
GLAD			
Full thickness	21 (77.8)	—	N/A
Partial thickness	6 (22.2)	—	N/A
Labral advancement into defect	15 (55.5)	—	N/A
Microfracture	17 (63.0)	—	N/A
Size, † mm ²	69 (12-175)	—	N/A

GLAD, glenolabral articular disruption.

*Data are presented as n (%) unless otherwise noted. Statistical significance was defined as $P < .05$.

†Two patients who had GLAD lesions confirmed during surgery were not found to have visible evidence of GLAD on magnetic resonance imaging.

Table 2. Group Comparisons of Hill-Sachs Lesion Size, On- Versus Off-Track Lesions, and Glenoid Bone Loss Between Groups

	GLAD + Bankart	Bankart Only	P Value
Hill Sachs lesion, n (%)	9 (33.3)	11 (40.7)	.572
Hill Sachs size, range	15.3 mm (11.3-19.1 mm)	14.4 mm (7.5-19.7 mm)	.500
On-track lesion	9/9 (100%)	11/11 (100%)	.999
Glenoid bone loss, range	6.0% (0%-14.9%)	5.5% (0%-17.2%)	.374

Statistical significance was defined as $P < .05$.

The ICCs for absolute agreement were 0.181 (width) and 0.083 (height) for interrater agreement and 0.689 (width) and 0.874 (height) for intrarater agreement. These values correspond with “poor” interrater and “fair-to-excellent” intrarater reliability based on description by Fleiss²² (0.75–1.00 = excellent reliability, 0.40–0.75 = fair to good reliability, and 0–0.40 = poor reliability).

Discussion

The most important finding of this study is that patients who underwent arthroscopic Bankart surgery with and without GLAD lesions experienced similar and significantly improved PRO metrics without any observed difference in recurrent instability or revision rates at mean follow-up of 4.5 years. These findings suggest there may not be an association between GLAD lesions and inferior outcomes in patients treated for anterior shoulder instability with arthroscopic stabilization.

The structural integrity of the glenoid is known to affect failure risk following arthroscopic stabilization surgery.²³⁻²⁴ Therefore it was reasonably contemplated that GLAD lesions may impair the normal zone of contact between the glenoid and humeral head in a manner that predisposes to recurrent instability.⁶ However, our findings do not provide strong support for this concept. The overall reoperation rate in patients that underwent arthroscopic Bankart surgery was low and patients with GLAD lesions were not at an increased risk for revision surgery, nor were they more

likely to suffer recurrent dislocation or report feelings of instability postoperatively. The current study’s results contrast previous findings that found the presence of GLAD lesions at the time of index surgery to be a significant risk factor for recurrent instability.⁶ The previous study readily acknowledged the relatively small sample size ($n = 7$) with GLAD lesions as a limitation, which is likely the reason for the observed differences compared with the 27 GLAD patients evaluated and matched in the current study. More recently, in a study that evaluated 22 patients with GLAD lesions, Davey et al.¹³ found no differences in postoperative visual analog scale for pain, Rowe, Shoulder Instability-Return to Sport after Injury and Subjective Shoulder Value scores between patients who underwent arthroscopic Bankart repair with and without GLAD lesions. Although a larger proportion of the GLAD cohort in their study was observed to require further surgery compared to the control group ($n = 3$, 13.6% vs $n = 2$, 4.5%), the difference was not statistically significant ($P = .32$). These results corroborate the findings in the current study.

The body of literature pertaining to GLAD lesions and their treatment is relatively sparse, with the majority of studies consisting of case studies or small series. A variety of arthroscopic treatment options have been described including chondroplasty,^{6,7,11,13} abrasion arthroplasty,⁷ microfracture^{6,11,13,25} suture of the cartilage flap,^{8,11,25,26} labral advancement into the defect^{6,11,13} and autologous bone marrow mesenchymal stem cell implantation.¹¹ Regardless of

Table 3. Preoperative and Postoperative Patient-Reported Outcome Scores*

	GLAD Group	Control Group	P Value
Preoperative ASES	69.6 (34.9-98.3)	67.5 (16.6-99.9)	.984
Postoperative ASES	93.2 (66.6-100)	93.3 (31.6-100)	.881
Preoperative SF-12 PCS	44.4 (31.3-60.4)	45.9 (29.9-58.5)	.533
Postoperative SF-12 PCS	55.8 (41.2-59.3)	54.1 (26.6-60.2)	.856
Preoperative SANE	60.7 (7-89)	59.8 (13-85)	.936
Postoperative SANE	91.4 (69-99)	91.0 (30-99)	.223
Preoperative QuickDASH	32.5 (2.0-66.0)	28.0 (2.0-67.0)	.726
Postoperative QuickDASH	8.2 (0-54.5)	7.3 (0-74.4)	.489
Satisfaction	10 (1-10)	10 (1-10)	.290

GLAD, glenolabral articular disruption; SLAP, superior labrum anterior posterior; ASES, American Shoulder and Elbow Surgeons; SANE, Single Assessment Numerical Evaluation; QuickDASH, short version of Disabilities of the Arm, Shoulder and Hand; SF-12, 12-Item Short Form Health Surgery; PCS, Physical Component Summary.

*Data are presented as mean (range) or median (range). Statistical significance was defined as $P < .05$.

Table 4. Relationships Between GLAD Lesion Morphology, Treatment Characteristics, and PROs

	Labral Advancement into Defect			Microfracture Treatment			GLAD Size (mm ²)	
	Yes	No	P Value	Yes	No	P Value	Spearman's rho, r_s	P Value
ASES	94.2 (70.0-100)	94.8 (74.9-100)	.794	94.8 (70.0-100)	93.5 (31.6-100)	.458	0.036	.810
SF-12 PCS	55.7 (48.7-58.8)	55.7 (41.2-59)	.340	55.2 (41.2-58.3)	54.6 (26.6-60.2)	.161	-0.085	.571
SANE	91.0 (69-99)	91.8 (84-99)	.906	91.8 (30-99)	90.8 (84-99)	.242	-0.154	.311
QuickDASH	5.8 (0-22.7)	10.9 (0-54.5)	.539	8.9 (0-54.5)	7.2 (0-70.4)	.717	-0.022	.883

GLAD, glenolabral articular disruption; PROs, Patient Reported Outcomes; ASES, American Shoulder and Elbow Surgeons; SANE, Single Assessment Numerical Evaluation; QuickDASH, short version of Disabilities of the Arm, Shoulder and Hand; SF-12, 12-Item Short Form Health Survey; PCS, Physical Component Summary.

Data are presented as mean (range). Statistical significance was defined as $P < .05$.

techniques used to treat the cartilage lesion, labral debridement and/or refixation using suture anchors is also generally performed.^{6-8,11,13,25,26} However, no consensus exists and clear indications of when particular treatment methods are necessitated is ill defined. The senior author's preferred method of treatment involves complete repair and refixation of the capsulolabral separation with appropriate capsulorrhaphy correlating with degree of instability on preoperative examination. For partial-thickness GLAD lesions, a chondroplasty is performed, and for larger, full-thickness lesions, microfracture drilling with capsulolabral advancement into the defect is routinely performed. Based on the current results, it is evident that excellent functional outcomes with high patient satisfaction and low recurrence are achieved using the described techniques. However, the authors acknowledge that standardizing treatment methods could optimize management and avoid potentially negative outcomes when GLAD lesions are encountered. The current study evaluated associations between specific morphologic and surgical characteristics and PROs. The goal was potentially identifying measurable risk factors for inferior outcomes that are available to the orthopaedic surgeon before surgery that would facilitate more informed communication and informed consent. The current findings demonstrate that patients achieved nearly identical outcomes regardless of whether they were treated with microfracture or with labral advancement. The only exception was that QuickDASH scores were noticeably better for those with labral advancement into the defect compared to no advancement (5.8 vs 10.9). Nevertheless, this difference did not demonstrate statistical significance and is well below the threshold of meaningful clinical importance.²⁷

Limitations

This study is subject to inherent limitations of retrospective studies including recall bias. The authors believe these limitations were mitigated as all questionnaire data were collected prospectively and stored in an outcomes database. The sample size of our study is

relatively small and is at risk for type II error. This was a matched comparative study that controlled for age, sex, and anchor number; however, subtle discrepancies between groups remained. The GLAD cohort experienced a larger interval from injury to index surgery and the control group underwent a slightly larger proportion of concomitant procedures, comparatively. Despite observed differences, none of these discrepancies were statistically significant. The intrarater and interrater agreement for GLAD lesion magnetic resonance imaging assessment was poor to moderate and could potentially result in a type II error in terms of associations between outcomes and GLAD lesion size. Because of a large proportion of patients with partial-thickness GLAD lesions who were lost to follow-up, PROs were not evaluated based on GLAD thickness as originally intended. Finally, the results from this otherwise healthy tertiary referral orthopaedic clinic population may not be generalizable to other distinctly different patient populations.

Conclusion

Arthroscopic Bankart repair in patients with GLAD lesions resulted in significantly improved outcomes with high satisfaction, which was no different when compared to those without GLAD lesions.

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