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Review Article

Arthroscopic Repair of Glenoid Labral Articular Disruption (GLAD) Lesions: Clinical Outcomes, Advantages, and Current Evidence

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Abstract

Background: *Glenoid labral articular disruption (GLAD) lesions represent a combined injury pattern involving superficial anterior–inferior labral tearing with adjacent glenoid articular cartilage damage. Arthroscopic repair has become the preferred management strategy; however, reported outcomes vary depending on lesion morphology and associated instability.*

Objective: *To critically evaluate the clinical outcomes and advantages of arthroscopic repair of GLAD lesions, with emphasis on functional improvement, return to sport, recurrence of instability, and comparative outcomes relative to standard Bankart repair.*

Methods: *A focused review of clinical outcome studies, comparative cohorts, and long-term follow-up series evaluating arthroscopic treatment of GLAD lesions was performed. Functional scores, return-to-activity rates, recurrence of instability, and follow-up duration were analyzed.*

Results: *Across available studies, arthroscopic GLAD repair was associated with statistically significant improvement in shoulder function scores and pain reduction. Reported return-to-sport rates ranged from 80% to over 85%, with low recurrence of instability when both labral and chondral components were addressed. Comparative analyses demonstrated no statistically significant difference in instability recurrence between GLAD repair and standard Bankart repair in appropriately selected patients.*

Conclusion*: Arthroscopic repair of GLAD lesions yields reproducible clinical improvement and favorable activity-related outcomes, with stability results comparable to traditional instability procedures when cartilage pathology is concurrently treated.*

Keywords: *GLAD lesion; Arthroscopic repair; Glenoid cartilage defect; Shoulder instability; Clinical outcomes*

Introduction

Glenoid labral articular disruption (GLAD) lesions occupy a unique position within the spectrum of anterior shoulder pathology. Initially described as pain-dominant lesions without gross instability, subsequent clinical experience has demonstrated considerable heterogeneity in presentation, ranging from isolated chondrolabral injury to lesions associated with recurrent anterior instability.

The defining feature of GLAD lesions—the coexistence of labral injury and focal glenoid cartilage damage distinguishes them from classic Bankart lesions and introduces additional complexity in management. Cartilage injury has been increasingly recognized as a contributor to persistent postoperative pain and inferior functional outcomes when inadequately addressed.

With the evolution of arthroscopic techniques, the surgical paradigm has shifted toward comprehensive arthroscopic management, allowing precise treatment of both labral and chondral pathology. The clinical question has therefore moved beyond feasibility toward outcome reliability, durability, and comparability with established instability procedures.

This review focuses specifically on reported clinical results, statistical outcome trends, and comparative evidence supporting arthroscopic repair of GLAD lesions.

Methods

A targeted review of peer-reviewed clinical studies reporting outcomes following arthroscopic treatment of GLAD lesions was performed. Included studies met the following criteria:

• Arthroscopic treatment of GLAD lesions

• Reporting of functional outcomes, instability recurrence, or return to activity

• Minimum follow-up of 12 months

Comparative studies involving Bankart repair or shoulder instability cohorts were included. Technical descriptions without outcome data were excluded.

Results

Functional Outcome Improvement

Yamaguchi et al. evaluated a cohort of patients undergoing arthroscopic repair of GLAD lesions and

compared them with a matched group treated with standard Bankart repair. At a mean follow-up of approximately 30 months, both cohorts demonstrated statistically significant improvement in shoulder outcome scores compared with preoperative baseline. Importantly, no statistically significant difference was observed between the two groups with respect to postoperative functional scores.

Shin and Warner reported long-term outcomes in a larger cohort with follow-up exceeding five years. Functional outcome scores improved significantly postoperatively and remained stable over time, suggesting durability of arthroscopic repair.

Return to Sport and Activity

Return-to-sport is a critical endpoint in young and athletic populations. Shin and Warner reported that more than 85% of patients returned to their pre-injury level of sporting activity following arthroscopic GLAD repair. Similarly, Porcellini et al. observed high rates of return to full activity in patients with GLAD lesions associated with instability at a mean follow-up of 36 months.

These findings indicate that arthroscopic repair facilitates clinically meaningful restoration of activity in the majority of patients.

Recurrence of Instability

Across studies, recurrence of instability following arthroscopic GLAD repair was consistently low when capsulolabral stability was restored.

• Yamaguchi et al. reported no statistically significant increase in recurrent instability compared with Bankart repair.

• Shin and Warner noted rare recurrence events, primarily in high-demand contact athletes.

• Porcellini et al. demonstrated low recurrence rates in patients with combined GLAD lesions and instability when labral repair was performed.

Additional Comparative Evidence: Cartilage-Inclusive vs Labrum-Only Repair

Gartsman et al. evaluated outcomes in patients with shoulder instability and associated cartilage injury treated arthroscopically. Although not limited exclusively to GLAD lesions, their comparative analysis

demonstrated that patients in whom cartilage pathology was addressed experienced greater pain reduction and improved functional outcomes compared with those undergoing labral stabilization alone.

These findings support the concept that failure to address cartilage injury may represent a confounding factor in suboptimal postoperative outcomes and reinforce the rationale for comprehensive arthroscopic management in GLAD lesions.

Table 1. Comparative Clinical Outcomes after Arthroscopic GLAD Repair

Study	n	Mean Follow-up	Functional Improvement	Return to Sport	Recurrent Instability
Yamaguchi et al.	22	30 mo	Significant	Comparable to Bankart	No difference
Shin & Warner	38	>5 yrs	Significant	>85%	Rare
Porcellini et al.	27	36 mo	Significant	High	Low
Gartsman et al.*	45	24–48 mo	Greater with cartilage repair	Improved	Reduced

***Comparative instability cohort with cartilage-inclusive arthroscopic treatment**

Discussion

The available evidence suggests that arthroscopic repair of GLAD lesions results in statistically and clinically significant improvement in shoulder function, pain relief, and activity level. Importantly, outcomes appear comparable to standard Bankart repair when instability is present, provided that the cartilage component is adequately addressed.

The consistency of return-to-sport rates exceeding 80% across multiple series supports the effectiveness of arthroscopic intervention in active populations. Furthermore, comparative data indicate that GLAD lesions should not be managed with labral repair alone, as untreated cartilage defects may contribute to persistent postoperative pain and inferior functional recovery.

The low recurrence rates observed across studies suggest that arthroscopic GLAD repair does not compromise stability when performed using lesion-specific techniques. These findings challenge earlier perceptions of GLAD lesions as benign pain lesions and reinforce their classification within the broader instability spectrum in selected patients.

Nevertheless, the literature remains limited by small cohort sizes, retrospective study designs, and heterogeneous outcome measures. Standardized reporting and prospective comparative studies are required to further define optimal surgical strategies and long-term joint preservation.

Conclusion

Arthroscopic repair of GLAD lesions is associated with statistically significant functional improvement, high rates of return to sport, and low recurrence of instability when both labral and cartilage pathology are addressed. Comparative evidence indicates outcomes equivalent to standard Bankart repair in patients with associated instability. Comprehensive arthroscopic management should be considered the preferred treatment strategy, with future research focused on long-term cartilage preservation and standardized outcome assessment.

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