

Outcomes of Latarjet and Distal Tibial Allograft Reconstruction for Glenohumeral Instability in Patients With Seizure Disorders: A Comparative Matched-Pair Analysis

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INTRODUCTION: The purpose was to compare patient reported outcome measures (PROMs), persistent instability and reoperation rates after glenoid reconstruction using either a Latarjet procedure or a distal tibial allograft in patients with glenohumeral instability and with or without a history of seizure disorder.

METHODS:

A retrospective review of a prospectively-collected clinical database from a single institution was conducted to identify all patients that had undergone a Latarjet procedure or distal tibial allograft (DTA) reconstruction for glenohumeral instability between the years 2005-2023. Exclusion criteria included arthroscopic Latarjet, history of prior shoulder arthroplasty, or less than 2-years follow-up. Review of the electronic medical records identified 56 shoulders in patients who had a history of seizure disorder as etiology of their glenohumeral instability. These patients were propensity-matched 1:2 propensity based on age \pm 5 years, date of surgery \pm 5 years, and procedure (Latarjet vs DTA) to identify a second cohort of 112 patients without a seizure disorder. As such, the two cohorts were comprised of 168 total patients (129 Latarjet and 39 DTA). There were no differences between the two cohorts in terms of age, sex, or laterality (**Table 1**). Patient demographics, past medial history, and preoperative physical examination findings were collected. Operative reports were reviewed to record fixation method, number of screws utilized, and any concomitant rotator cuff or biceps pathology. Incidence of post-operative seizures, dislocations, and reoperations were analyzed and compared. Postoperative PROM scores (including the Visual Analog Scale [VAS], Single Assessment Numeric Evaluation [SANE], and surgery satisfaction) were also collected. The mean postoperative follow-up for the seizure cohort was 5.8 ± 3.4 years compared to 6 ± 3.3 years for the non-seizure cohort ($p=0.575$).

RESULTS:

The seizure cohort reported significantly greater numbers of pre-operative dislocations ($p=0.002$) but had a history of fewer reported surgeries prior to glenoid reconstruction ($p=0.02$) (**Table 2**). No significant differences between cohorts were noted for preoperative flexion, internal or external rotation, strength in any plane, load and shift testing and a positive sulcus sign ($p>0.05$ for all). Intra-operatively, there were no differences between seizure patients and non-seizure patients regarding fixation method, number of screws utilized, concomitant rotator cuff pathology, or Hill-Sach's lesions noted ($p>0.05$ for all) (**Table 3**). A greater percentage of seizure patients had humeral head allograft procedures performed at time of glenoid reconstruction (6 (11%) vs. 2 (2%); $p=0.01$). There were no statistically significant differences between cohorts in terms of PROMs or satisfaction with surgery at most recent follow-up ($p>0.05$ for all). There were no significant differences between cohorts regarding the total number of post-operative dislocations ($p=0.265$), with the majority of patients reporting none. Thirteen patients (54%) in the seizure cohort had at least 1 post-operative seizure. Six patients (11%) in the seizure cohort experienced recurrent instability versus 7 patients (6%) in the non-seizure cohort ($p=0.307$) (**Table 4**). There were no differences in the number ($p=0.102$) or indications for reoperation ($p=0.853$) (**Table 4**).

DISCUSSION AND CONCLUSION:

In this propensity-matched study, Latarjet and Distal Tibial Allograft glenoid reconstruction demonstrated similarly satisfactory postoperative PROMs for patients with and without seizure disorders when humeral head defects were properly addressed. The rates of reoperation and persistent instability were comparable between cohorts. The majority of seizure patients remained stable despite evidence of persistent postoperative seizures in half of the patients.

Characteristic	Seizure (n=56)	Non-Seizure (n=112)	P-Value
Age	29.2 ± 8.7	28.4 ± 9.4	0.463
Sex			>0.999
Male	47 (84)	94 (84)	
Female	9 (16)	18 (16)	
BMI	28.0 ± 5.6	26.3 ± 5.0	0.630
Laterality			0.274
Right	28 (52)	48 (43)	
Left	27 (48)	64 (57)	
Procedure			>0.999
Latarjet	43 (77)	86 (77)	
Distal Tibial Allograft	13 (23)	26 (23)	
Type of Dislocation			0.753
Anterior	33 (59)	109 (97)	
Posterior	3 (5)	3 (3)	

*Data are expressed as mean ± SD or n (%).

Characteristic	Seizure (n=56)	Non-Seizure (n=112)	P-Value
Number of Prior Dislocations	20.5 ± 31.9	16.4 ± 28.2	0.002
Number of Prior Surgeries	0.5 ± 0.6	1 ± 1	0.028
Flexion ROM	142 ± 34.1	149.5 ± 33.2	0.251
External Rotation ROM	48.0 ± 20.3	56.5 ± 23.8	0.026
Internal Rotation ROM			0.068
Thornic	16	30	
Lumbar	10	11	
Sacrum/Coccyx	6	7	
Abduction Strength	4.9 ± 0.2	4.8 ± 0.6	0.575
External Rotation Strength	4.9 ± 0.3	4.9 ± 0.6	0.792
Internal Rotation Strength	5.0 ± 0.0	4.9 ± 0.3	0.299
Positive Shoulder Apprehension	30 (54)	84 (75)	0.005
Load and Shift	2.2 ± 0.8	2.1 ± 0.6	0.455
Positive Sulcus Sign	5 (9)	11 (10)	0.853

*Data are expressed as mean ± SD or n (%).

Characteristic	Seizure (n=56)	Non-Seizure (n=112)	P-Value
Fixation Method			0.050
Cannulated screw	23 (41)	26 (23)	
Solid screw	29 (52)	72 (64)	
Suture button	4 (7)	14 (13)	
Number of Screws			0.571
0	4 (7)	14 (13)	
1	1 (2)	2 (2)	
2	51 (91)	96 (86)	
Rotator Cuff Pathology	4 (7)	4 (4)	0.306
Biceps Pathology	4 (7)	1 (1)	0.025
Humeral Head Allograft	6 (11)	2 (2)	0.010
Hill Sach's Lesion	22 (41)	30 (27)	0.065

*Data are expressed as n (%).

Characteristic	Seizure (n=56)	Non-Seizure (n=112)	P-Value
Patients with Recurrent Instability	6 (11)	7 (6)	0.307
Number of Reoperations	7	6	0.302
Reasons for Reoperation			0.853
Shoulder instability	6	4	
Pain/irritation	1	1	
Infection	0	1	
Reoperation Details*			
Latarjet	1	2	
Distal tibial allograft	1	0	
Hemiarthroplasty	2	1	
Remplissage	0	1	
Capsular release/rotator cuff advancement	1	0	
Biceps tenodesis	2	0	
Neurolysis	1	0	
Chondroplasty	1	0	
MUA/arthroscopy-assisted	1	2	
I&D	0	4	
Synovectomy	0	1	
Posterior arthroscopy	0	1	
Iliopsoas repair	0	1	

*Data are expressed as n. *Shoulder arthroplasty and deceased patients were excluded from analysis.

*Multiple procedures may have been done at the time of reoperation.