

ASES 2018 CLOSED MEETING ABSTRACTS

Paper #1 PROSPECTIVE EVALUATION OF GLENOID BONE LOSS AFTER FIRST-TIME AND RECURRENT ANTERIOR GLENOHUMERAL INSTABILITY EVENTS

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Introduction: Determining the amount of glenoid bone loss in patients following anterior glenohumeral instability events is critical to guiding appropriate treatment. One of the challenges in managing shoulder instability in young athletes is the absence of clear data showing the impact of each event. The purpose of this study was to prospectively determine the amount of bone loss associated with a single instability event, in the setting of both first-time and recurrent instability.

Methods: We conducted a prospective cohort study of 714 athletes surveilled for four years. Baseline assessment included a subjective history of shoulder instability. Bilateral noncontrast shoulder MRIs were obtained in all participants with and without a history of previous shoulder instability. The cohort was prospectively followed during the study period and those who sustained an anterior glenohumeral instability event were identified. A post-injury MRI with contrast was obtained and compared to the screening MRI. Glenoid width was measured for each patient's pre- and post-injury MRI. The projected total glenoid bone loss was calculated and compared for patients with a prior history of shoulder instability.

Results: Of the 714 athletes (1428 shoulders) that were prospectively followed during the four-year period, 23 shoulders in 22 subjects sustained a first-time anterior instability event (5 dislocations, 18 subluxations), and six subjects with a previous history of instability sustained a recurrent anterior instability event (1 dislocation, 5 subluxations). On average, there was statistically significant glenoid bone loss (1.84 ± 1.47 mm) following a single instability event ($P < .001$), equivalent to 6.8% (95% CI: 4.46%, 9.04%, range 0.71%-17.6%) of the glenoid width. Twelve shoulders (52%) demonstrated glenoid bone loss $\geq 5\%$, 4 shoulders demonstrated glenoid bone loss $\geq 13.5\%$ and no shoulders had $\geq 20\%$ glenoid bone loss after a first-time instability event. Pre-existing glenoid bone loss in subjects with a history of instability was 10.2% (95% CI: 1.96%, 18.35%, range 0.6%-21.0%). This bone loss increased to 22.8% (95% CI: 20.53%, 25.15%, range 21.2% to 26.0%) following additional instability ($P = .0117$). All six shoulders with recurrent instability had $>20\%$ glenoid bone loss.

Conclusion: Glenoid bone loss of 6.8% was observed after a first-time anterior instability event. In the setting of recurrent instability, the total calculated glenoid bone loss was 22.8%, with a high prevalence of bony Bankart lesions (5/6). The findings of this study support early stabilization of young, active subjects following a first-time anterior glenohumeral instability event.

Keywords: First-time, Shoulder Instability, Bone Loss, Recurrence

Paper #2 LONG-TERM RESULTS OF THE OPEN LATARJET PROCEDURE FOR RECURRENT ANTERIOR SHOULDER INSTABILITY IN PATIENTS OLDER THAN 40 YEARS

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Background: Age older than 40 years at surgery is known to be an independent risk factor for outcome after the Latarjet procedure. So far, no long-term results about the Latarjet procedure in elderly are available. It was the purpose to analyze long-term results of the open Latarjet procedure for recurrent anterior shoulder instability in patients older 40 years.

Methods: Thirty-two patients (33 shoulders) with a mean age of 49 (range, 40-66) years were evaluated at a mean of 11.3 (range, 8-16) years after open Latarjet procedure for recurrent anterior shoulder instability. Eleven patients (33%) underwent previous soft-tissue based stabilisation surgery and four (12%) received a concomitant supraspinatus repair. Clinical and radiographic (with CT-scan) long-term results were assessed.

Results: At final follow-up, the relative preoperative Constant score and SSV had improved from 80% to 89% ($P = .003$) and from 60 to 90 points ($P < .001$). The postoperative total Rowe score averaged at 92 (range, 55-100) points and 30 patients (96%) rated their final overall results as good or excellent. Seven patients (22%) underwent joint preserving surgery and one (3%) underwent reverse total shoulder arthroplasty for severe dislocation arthropathy and shoulder dysfunction. There was one redislocation (3%) and apprehension persisted in seven patients (22%), which was associated with too medial (>4 mm) graft positioning ($P = .005$). Postoperative dislocation arthropathy according to Samilson was severe in 14 patients (44%) and progressed ≥ 2 grades from preoperatively in 17 patients (41%). Progression of dislocation arthropathy was associated with too lateral (>1 mm) graft positioning ($P = .023$) and correlated with older age at surgery ($r = 0.650$; $P < .001$).

Conclusion: The open Latarjet procedure for recurrent anterior shoulder instability in patients older than 40 years is associated with good functional outcome and stability. In contrast, it is associated with a substantial rate of dislocation arthropathy and progression of arthropathy correlates with lateral graft positioning and older age at surgery.

Paper #3 RETURN TO SPORT FOLLOWING LATARJET VERSUS DISTAL TIBIA ALLOGRAFT FOR ANTERIOR SHOULDER INSTABILITY: A MATCHED COHORT ANALYSIS

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Introduction: The Latarjet procedure is recognized as the gold standard for return to function in recurrent anterior instability patients by virtue of the triple-block effect with respect to increased articular arc, dynamic stability from the subscapularis split, and the sling effect from the conjoint tendon. However, anatomic glenoid reconstruction, most recently evaluated using distal tibial allograft (DTA), is an alternative modality that has recently demonstrated similar clinical

outcomes, while lacking any donor site morbidity. Return to sport is a relevant clinical outcome in these cohorts, because they are often composed of young, active individuals, and comparison of both techniques is essential in patient counseling and management.

Methods: A prospectively maintained institutional registry was queried between 2005-2016 for all patients undergoing Latarjet or DTA for recurrent anterior shoulder instability. Patients with multidirectional instability, ligamentous laxity, or lack of preoperative sporting activity were excluded. Cohorts were matched using 1:1 propensity scores, using the nearest neighbor method, by age, gender, number of previous surgeries, and participation in contact sport. Preoperative 3d reconstructions of computed tomography (CT) scans were evaluated for glenoid bone loss, glenoid track, and humeral bone loss. A custom questionnaire was administered via phone to all included patients regarding participation in preoperative and postoperative sport. Sub-analysis was performed for return to contact sports, as defined by the American Academy of Pediatrics, and upper extremity demand. Recurrence of instability, need for revision surgery, range of motion, and change in Western Ontario Shoulder Instability Index (WOSI) score were also collected.

Results: A total of 80 patients (40 Latarjet, 40 DTA) met inclusion/exclusion criteria. Average follow-up was 46.4 ± 20.0 months for Latarjet cohort and 71.7 ± 20.4 for DTA. With regard to Latarjet and DTA respectively, average age was 28.2 ± 7.2 and 26.7 ± 5.3 years (P = .711), male:female ratio was 32:8 and 33:7 (P = .105), bmi was 26.8 ± 7.2 and 26.7 ± 5.3lbs/kg² (P = .907), number previous procedures were 1.0 ± 0.7 and 1.4 ± 1.2 (P = .079), and proportion playing contact sports was 28/40 and 28/40 (p = 1.00). Preoperative glenoid bone loss was 15.5 ± 4.9% (P = .075), humeral bone loss was 2611.2 ± 2137.0 and 2453.4 ± 2310.5 mm³ (P = .816),

and proportion of off-track lesions was 29.4% and 50.0% (P = .631) for Latarjet and DTA procedures, respectively. When comparing the Latarjet and DTA respectively, rate of return to OR was 3/40 and 4/40 (P = .692), recurrent instability was 15.0% and 27.5% (P = .172), and return to sport was 35/40 and 36/40 (P = .726). There was a significant difference between cohorts in the rate of return to contact sports (26/29 vs 19/30, P = .017), same/better level of competition (32/35 vs 24/36, P = .010) and intensity (26/35 vs 18/36, P = .035), and external rotation (-12.8 ± 21.2 vs 4.7 ± 9.8, P = .044) for Latarjet and DTA, respectively. No difference was found with respect to postoperative WOSI score (P = .081), return to sports requiring the throwing motion (P = .298), and satisfaction with regard to surgery (p = 1.0), sport (P = .060), and fitness level (P = .818).

Conclusion: Both glenoid reconstruction with DTA and the Latarjet offer high levels of satisfaction, return to sport, and improvement in clinical outcomes in patients with recurrent anterior instability. The Latarjet was found to be superior in achieving return to similar level and those involved in contact sports. The findings of this study inform clinical decision making in selecting the appropriate patient for each procedure given appropriate indications in medical history, demographics, and bone loss (Fig. 1) (Table 1).

Paper #4 MANAGEMENT OF THE FAILED LATARJET PROCEDURE: OUTCOMES OF REVISION SURGERY WITH FRESH DISTAL TIBIAL ALLOGRAFT

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Introduction: A patient with recurrent instability after a failed Latarjet procedure remains a challenge to address. The vast majority of these result in large amounts of bone loss, resorption, and issues with retained hardware.

Purpose: To determine the outcomes of patients who underwent revision surgery for a recurrent shoulder instability after a failed Latarjet procedure.

Methods: All consecutive patients who presented with recurrent anterior shoulder instability after a Latarjet procedure were prospectively enrolled. Patients were included if they had a prior Latarjet, may have had numerous prior instability procedures prior, and history and physical examination findings consistent with recurrent anterior shoulder instability. Patients were excluded if they had prior neurologic injury, a seizure disorder, bone graft requirements to the humeral head, or findings of multidirectional or posterior instability. History of shoulder instability was documented, including initial dislocation history, time of instability, number of prior procedures, and examination findings, as well as plain radiographic data and computed tomography

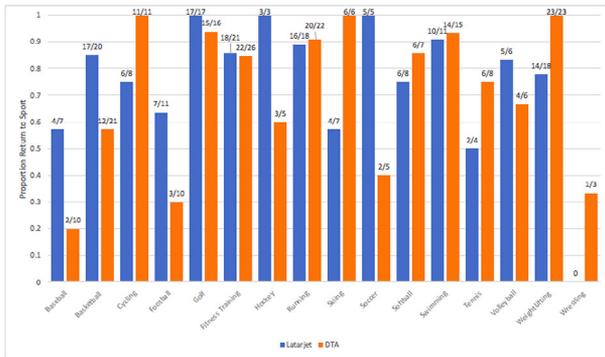


Figure 1 Distribution of return to sport outcomes by activity.

Table 1 Sub-analysis of return to sport outcomes following Latarjet and DTA reconstruction

	Latarjet	DTA	P-value
Return to contact sports			
No contact	4/4 (100%)	5/5 (100%)	n/a
Limited contact	3/3 (100%)	4/4 (100%)	n/a
Contact/collision	26/29 (89.7%)	19/30 (63.3%)	.017
Unclassified	4	1	
Return to highest level of upper extremity demand			
Low demand	5/5 (100%)	5/5 (100%)	n/a
High demand	27/29 (93.1%)	28/32 (87.5%)	.465
Not upper extremity	6	3	
Return to throwing sports			
Throwing sport	9/17 (52.9%)	8/22 (36.4%)	.298