Arthroscopic Latarjet: Prospective Evaluation of Clinical Outcomes, Graft and Screw Positioning, and Coracoid Graft Union on Computed Tomography at 6 Months Postoperatively

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INTRODUCTION:

For treatment of recurrent instability or significant bone loss, the Latarjet procedure provides effective shoulder stability with exceptional clinical outcomes. Described in 2003, the arthroscopic Latarjet procedure is a technically demanding procedure with a slow learning curve (between 20-30 cases), but has the advantages of reduced scarring and postoperative stiffness, faster recovery, ability to better visualize your articular reduction and ability to treat concomitant glenohumeral injuries. Prior literature has supported the arthroscopic Latarjet to have equivalent instability recurrence rates, functional outcomes, and complication rates compared with the open Latarjet procedure. The purpose of this study was to prospectively assess clinical outcomes following the arthroscopic Latarjet procedure and assess graft union on computed tomography (CT) at 6 months postoperatively.

METHODS: This is a prospective, consecutive evaluation of all patients that underwent arthroscopic Latarjet procedure treated by a single surgeon from June 2017 to December 2021. Patients with recurrent anterior shoulder instability that failed conservative treatment, ISIS score > 4, and a minimum follow up of 6 months were included. Preoperative CT was utilized to assess Glenoid Track (GT), Hill-Sachs interval (HSI), and the difference between HSI and GT (HSI-GT) [**Figure 1A and 1B**]. Immediate postoperative CT scans were obtained to assess GT measurement and screw position [**Figure 1C**]. 6-month follow-up CT scans were also obtained to assess for changes in graft or screw position, and compare postoperative to preoperative GT. Bony union rates were assessed at 6 months. Preoperative and postoperative range of motion and clinical outcomes [Rowe score, Western Ontario Shoulder Instability Index (WOSI) score, and Simple Shoulder Test (SST)] were obtained for all patients. Complications were recorded. Univariate analysis was utilized with $p < 0.05$ considered statistically significant.

RESULTS: Forty-six patients were included in this study with an average age of 26.39 +/- 9.83 years, and average follow up of 25.95 months (range, 7-52 months). Thirty-nine (87.4%) patients were male. On preoperative CT, 38 patients (82.6%) had Off-Track lesions identified and average glenoid bone loss was 14.4% +/- 0.062%. Overall, excellent clinical outcomes were obtained with significant improvements in Rowe (50.87 to 95.76, $p < 0.001$), WOSI (1064.67 to 199.89, $p < 0.001$), and SST (7.00 to 11.61, $p < 0.001$) at final follow up [**Table 1**]. In total, 97.6% of patients were very satisfied at final follow up. A mean external rotation loss of 12º (range, 0º to 18º) was observed at final follow up. Complications included 2 intraop graft fractures (4.3%), one postoperative radial nerve neurapraxia that resolved at 3 months (2.1%), and one case of recurrent instability 4 months postoperatively after a seizure (2.1%). Two cases early on in the series were converted to open intraoperatively (4.3%). No postoperative infections were observed. Of the 38 patients with preoperative Off-Track lesions, 36 (94.7%) were measured to be On-Track on postoperative CT. In the sagittal plane, 95.6% of grafts were optimally placed with regards to superior to inferior position [**Figure 1D**]. In the axial plane, 93.5% were in an optimal position with regards to medial and lateral position [**Figure 1E**]. The average screw angulation was 17.05º (range, 7º to 40.3º). There was a 93.5% graft union rate observed at 6 months postoperatively on CT.

DISCUSSION AND CONCLUSION: This study demonstrates that the arthroscopic Latarjet is a reproducible, safe surgical technique with excellent clinical results and a complication profile that emulates the open Latarjet procedure. Furthermore, this study was unique in prospectively evaluating consecutive cases with postoperative CT and demonstrated an excellent union rate (93.5%) at 6 months postoperatively. These results should be interpreted with caution, as this procedure does have a steep learning curve. However, proper surgical indications, procedural training, and practice can achieve superb clinical outcomes, a low complication profile, high frequency of optimal graft placement, and a high graft union rate.

Figure 1. Measurement technique utilized for: A) Glenoid Track measurement pre- and postoperatively; B) Hill-Sachs Interval (same technique utilized pre- and postoperatively); C) postoperative screw angulation assessment; D) Sagittal plane assessment of graft position relative to glenoid equator line; E) Axial plane assessment of graft position relative to glenoid face.

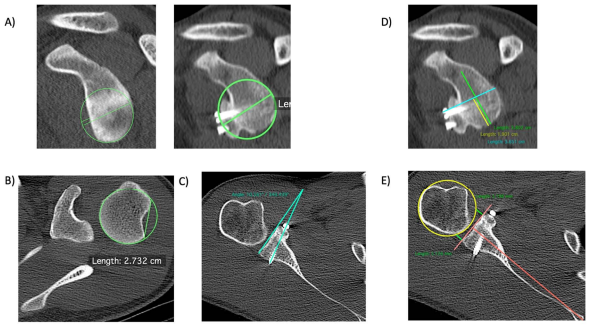

Table 1. Comparison of Preoperative and Postoperative Clinical Outcome Measures. Univariate statistical analysis was utilized to compare groups and significance was set at $p < 0.05$).

Outcome Measure	Preop (SD)	Postop (SD)	p-value
Rowe	50.87 (6.52)	95.76 (8.94)	<0.001
WOSI	1064.72 (437.61)	199.89 (269.17)	<0.001
SST	7.00 (1.35)	11.61 (1.11)	<0.001