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Results of mini-open Latarjet technique in patients with recurrent anterior dislocations of the shoulder

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Abstract

Introduction: Bony Bankart lesions and recurrent dislocations with multiple episodes have poor results when managed arthroscopically. Classical Latarjet using a long incision and cutting of subscapularis tendon is associated with several complications. This study was done to evaluate the outcome of Latarjet procedure by mini-open technique in recurrent shoulder dislocations with or without bony Bankart lesion.

Materials and Methods: A total of 16 patients managed by mini open Latarjet technique with a 3-4 cms long incision and splitting the subscapularis tendon were followed up for a minimum of one year. The outcome was calculated using ROWE score for the shoulder at final follow up.

Results: The mean external rotation achieved was 57.5 degrees (45-70 degrees). The functional outcome as per the mean ROWE score was excellent in 13 patients and good in 3. The overall mean ROWE score was found to be 91.8% (80-95). Coracoid position was found to be medial in 3 patients while no lateralisation of the graft was noticed. 12 patients showed complete union while 3 showed delayed union (>6 months). One patient only developed fibrous union (6.25%). One patient developed Staph infection post-operatively.

Conclusion: The classical Latarjet procedure results in a large scar and decreased external rotation. Adequate exposure can be obtained by a mini open incision with splitting of the subscapularis. This improved functional outcomes and had a smaller scar.

Keywords: Mini-open Latarjet, Rowe score, coracoid graft, antero-inferior glenoid

Introduction

Recurrent anterior dislocation of shoulder is the common complication following anterior dislocation of shoulder especially in the younger population. The Indian population is often negligent and only seek consultation after several episodes of recurrent dislocations. At this point, an arthroscopic management of the same becomes difficult with high failure rates^[1, 2]. Several open procedures have been described in literature to provide a pain free, stable and mobile shoulder joint^[3].

Glenoid bone loss is commonly observed in anterior instability and varies greatly in both its extent and significance^[4, 5]. Burkhart *et al.* reported a recurrence rate of 4% following arthroscopic Bankart repair for anterior instability in patients without significant bone deficiency, whereas the rate of recurrence was 67% in the presence of a bone lesion.² Also, multiple episodes of dislocations lead to degeneration of capsule-labral tissues and are difficult to reconstruct arthroscopically or by open techniques.

Latarjet described a technique where the coracoid process is fixed to the antero-inferior rim of the glenoid using screws and is used specially in cases with anterior glenoid bone loss (bony Bankart's). This study was done to evaluate the outcome of Latarjet procedure by mini-open technique in recurrent shoulder dislocations with or without bony Bankart lesion.

Materials and Methods

A total of 19 patients who presented to our Orthopaedics department between Mar 2012-Feb 2017 with recurrent anterior dislocation of the shoulder were first evaluated clinically and

radiologically. Adult patients with traumatic recurrent shoulder dislocation of at least 3 times with or without bony Bankart or Hill Sach's lesions were included in the study. Those with ligament laxity, pathological dislocation and history of epilepsy were excluded from the study.

All patients after clinical workup were subjected to relevant radiological investigations (x ray-antero-posterior view, lateral view and scapular y view) and were sent for a non-contrast MRI of the shoulder joint. ACT scan was done only in selected patients.

Patient were operated in supine position with the head end elevated to 20 degrees and a bolster under the ipsilateral Scapula. A 3-4 cms incision was given over the deltopectoral groove extending from the tip of the coracoid process towards the Axilla. The Cephalic vein was identified and retracted medially or laterally as per convenience and an interval between the deltoid and the pectoralis was made. Meticulous hemostasis was achieved and the tip of the coracoid process and the conjoint tendon was identified. The superior surface of the coracoid process was cleared and a blunt retractor was placed at the knee of the coracoid to allow for better visualization.

The pectoralis minor tendon was then identified medially and shaved off the coracoid while protecting the Musculocutaneous nerve. The coraco-acromial ligament on the lateral side was cut while leaving a small stump on the coracoid side. Multiple drill holes were made at the base of the coracoid process in a medial to lateral direction to avoid neurovascular injury. The osteotomized coracoid process was then cleared off the coracohumeral ligament inferiorly to allow for better excursion. The undersurface was roughened and two drill holes were made in the supero-inferior direction to aid future screw fixation.

The lower margin of the Subscapularis was identified with the help of neurovascular structures and split horizontally with scissors at the middle and lower one third junction to approach the antero inferior glenoid rim. A part of the capsule was vertically split below the equator along the antero inferior glenoid margin and a 32cm area was roughened (3-5 'o clock position).

The prepared coracoid graft was placed over this area and fixed using either two 4.0 mm cannulated screws or with one 4.0 mm cannulated and one malleolar screw through the pre-drilled holes. Closure was done in standard fashion and an arm sling was provided at 90 degrees flexion of the elbow joint.

The patient was then started with physiotherapy from the third post-operative day in the form of all movements except extreme abduction and external rotation. The patients were discharged on the 12th day after stitch removal and were followed up at 3 weeks, 6 weeks and 12 weeks. The mean follow-up period was 1 year and 9 months (1 year to 3.5 years) Post-operative shoulder function was evaluated using ROWE score. The results were presented as mean and median.

Results

Three patients were lost to follow up and 16 were followed up for a minimum of one year. The mean external rotation achieved was 57.5 degrees (45-70 degrees). The mean abduction achieved was 156 degrees (130-174), mean flexion of 80 degrees (60-90) and mean internal rotation of 80 degrees (70-90). (Fig I, II)

The functional outcome assessed as per the mean ROWE score was found to be excellent (90-100) in 13 patients (81.2%) and good (70-89) in 3. The mean ROWE score overall was found to be 91.8% (80-95). Apprehension test done at final follow up was negative for all patients at final follow-up. Coracoid position was found to be medial in 3 patients while no lateralisation of the graft was noticed.

Twelve patients showed complete union while 3 showed delayed union (>6months). One patients only developed fibrous union (6.25%)

One patient developed infection post-operatively and required extended antibiotic treatment for Staph aureus and local debridement to eradicate infection. The fixation was retained and the eventual healing was with fibrous union. No patients presented with complains of any screw pull outs, dislocations, and arthritis or shoulder instability by final follow up. The coracoid position and screw fixation was maintained in all patients until the final follow up.



Ia: Pre op X-ray

Ib: Follow up X rays at 3 years



Ic: Clinical photos showing scar and range of motion at final follow up

Patient 1



IIa: Pre op Xray

IIb: Post op Xray

IIc: Clinical photos at final follow up



IIid: X rays at final follow up at 1.5 years

Patient 2

Discussion

The open Latarjet procedure is a mainstay for the treatment of recurrent shoulder dislocations especially those associated with bony Bankart's and multiple dislocations. The classical Latarjet procedure uses an incision of 8-10 cms with cutting

of the subscapularis tendon off the lesser tuberosity. This resulted in a large scar and decreased external rotation [6]. a large systematic review found an overall complication rate of 15% with the Latarjet procedure. (Longo)

| Study | Patients | Follow up (months) | Outcome (%) | | | |
|-------------------------------|----------|--------------------|-------------|------|------|------|
| | | | Excellent | Good | Fair | Poor |
| Hovelius <i>et al.</i> [8] | 118 | 182 | 71 | 15 | 11 | 4 |
| Matthes <i>et al.</i> [9] | 29 | 38 | 59 | 24 | 10 | 7 |
| Rao <i>et al.</i> [10] | 10 | 12 | 60 | 30 | 10 | - |
| Dossim <i>et al.</i> [11] | 84 | 98 | 30 | 43 | 16 | 11 |
| Edouard <i>et al.</i> [12] | 20 | 21 | 95 | 0 | 0 | 5 |
| Di Giacomo <i>et al.</i> [13] | 26 | 17 | 69 | 23 | 8 | 0 |
| Our study | 16 | 12 | 81 | 19 | 0 | 0 |

In our study, adequate exposure was attained by a mini open incision of 3-4 cms with splitting of the subscapularis at its middle and lower third junction to access the antero-inferior glenoid rim. This improved functional outcomes and a smaller scar. This is similar to the results reported in literature with mini open Latarjet procedure shown in Table 1. Collin *et al.* in their study on 74 patients with an average 50 month follow up found excellent results in 18.8% and good results in 50% [14]. Loss of external rotation has been a widely documented outcome of Latarjet repair with Singer *et al.* [15] Reporting a loss of upto 20 degrees. We achieved a mean of 57.5 degrees in our study with consistent and graduated physiotherapy. This is similar to the results attained by Auffarth *et al.* [16] And Hovelius *et al.* [8]. This was probably due to splitting of the subscapularis tendon rather than cutting it.

In our study, no patients had any incidence of dislocations at final follow up. Allain *et al.* [17]. Reported no recurrent dislocation but found subjective subluxation in one (2%) patient while Hovelius *et al.* [8]. reported a recurrence rate of 4% and subluxation rate of 9%. This could be due to relatively small follow up period of our patients as compared to those Reported in literature. Walch *et al.* in their extensive Series have reported instability recurrence rate of 1% [18, 19].

We noticed medialization of grafts in three patient's and lateralization in none. This is lesser than those reported in Literature [8, 17, 20] Which was probably due to the use of a Cobra Retractor against the posterior rim of the glenoid for better visualization. This allowed for accurate positioning of the graft. Although we didn't notice any arthritis due to smaller follow up and accurate graft positions. Lateralized grafts have been reported to be associated with arthritis of the shoulder joint with longer follow ups [21].

One patient developed infection in our study which was managed by debridement and antibiotics. Though the recovery was uneventful the graft went into fibrous union and decreased range of motion. Shah *et al.* had reported a 6% infection rate in their study, all of which resolved with thorough lavage and debridement [22]

Griesser *et al.* [23] in their systematic review of 1904 shoulders reported a non-union rate of 9.1%. There have also been studies [24] that have reported non-union rates as low as 1.7%. We found non-union in one patient. It is essential to ensure that the antero-inferior part of the glenoid and under surface of the coracoid process is properly roughened upto bleeding bone before fixing the graft. Also, small grafts were managed using a screw with a washer over the margin of the coracoid

graft along with a proximal screw fixation to prevent rotation. Though an arthroscopic Latarjet technique offers several benefits like good exposure of the joint and cartilage, minimal soft tissue trauma, it is a technically difficult procedure with a steep learning curve. The mini open Latarjet procedure keeps the incision to a minimum using the skin elasticity for exposure. The fixation can be done adequately even without traumatizing the subscapularis tendon.

Conclusion

The mini-open Latarjet technique with a 3-4 cms using the subscapularis splitting technique offers adequate exposure owing to the elasticity of the tissues. It leads to better outcomes and a more acceptable scar. The use of a cobra retractor intra operatively across the glenoid rim helps for better exposure of the antero inferior glenoid rim and proper placement of the coracoid graft.

A limited sample size and limited follow up of our patients are the limitations of our study.

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