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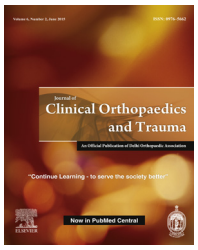

Original Article

Clinical and radiological outcome after mini-open Latarjet technique with fixation of coracoid with Arthrex wedge mini-plate

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ABSTRACT

Background: Technical faults leading to coracoid fractures during screw insertion and coracoid graft osteolysis are concerns with standard screw fixation techniques in Latarjet procedure. The purpose of this study is to share our experience using Arthrex wedge profile plate with mini-open technique for graft fixation, that ensures better load distribution between coracoid graft and glenoid.

Methods: We did retrospective analysis of 24 patients with recurrent anterior shoulder instability after failed arthroscopic Bankart's repair. Arthroscopic examination of affected shoulder was done in lateral position before making patient supine for open Latarjet. A low profile wedge plate (Arthrex) with two screws was used for the procedure. CT analysis was performed post-operatively at 6 months to see graft union and results were evaluated using the Rowe and Walch Duplay score.

Results: Mean follow-up time was 26 months. Postoperatively, mean forward elevation was 170.6 + 4.6° (loss of average 5.9°) and mean external rotation was 42.5 + 5.3° (loss of average 3.1°). All patients returned to their previous occupation. None reported to be having any recurrent subluxation. Functional assessment done using Rowe score and Walch Duplay score showed statistically significant improvement (p value 0.034). There were no implant-related complications and no case of coracoid graft osteolysis.

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Conclusions: Mini-open Latarjet with graft fixation with Arthrex mini-plate provides satisfactory outcome in patients who require reoperation due to dramatic bone loss and failed soft tissue reconstruction. The modified incision improves exposure enabling plate fixation and the secure fixation accelerates rehabilitation.

1. Introduction

Almost 97% of traumatic shoulder dislocations are associated with an underlying Bankart's lesion.[1] With the advent of latest arthroscopic techniques and implants, arthroscopic Bankart's repair has become the standard surgical method for primary anterior instability.[2–6] However, in cases with irreparable damage to labrum or significant bony defects of glenoid or humeral head, the arthroscopic Bankart's repair is insufficient to adequately stabilize the shoulder joint.[2–7] Hence, recurrent instability after Bankart's repair is the most frequently reported complication.[8] Recurrence rates of open procedures are about 10% whereas those of arthroscopic procedures vary from 0% to 43%.[7] Significant amount of these treatment failures are associated with failure to recognize and treat the full extent of pathologic process or bone loss. Major factors associated with failure of Bankart's surgery are significant gleno-humeral bone defects (>25% loss of inferior glenoid diameter or an inverted pear shaped glenoid) and an engaging Hill Sach's lesion.[8] The gold standard answer to these failures remains the Latarjet procedure, developed and reported first in 1954, where a large segment of the coracoid (2.5–3 cm in length) was transferred as bone graft to the anterior inferior glenoid rim and fixed with cancellous screws.[9]

Over time, this procedure has seen a plethora of modifications and changes in an attempt to improve the outcome. We recommend a Modified Latarjet procedure with a slightly medially placed incision that betters the exposure and allows fixation of coracoid with a low profile wedged plate (Arthrex, Naples, FL, USA) through a mini-skin incision. Plate fixation of coracoid would better compression and provide uniform load distribution between the graft and the glenoid bone surface and hence hasten union of graft, apart from enabling accelerated rehabilitation because of more secure fixation. Hence, this study aimed to assess the results of our modified mini-open Latarjet technique in patients with failed arthroscopic Bankart's repair. There are very few studies in literature that have described this procedure where coracoid fixation has been performed with a plate.

2. Material and methods

This prospective study conducted at our institute from June 2011 to May 2013 initially involved 30 patients (29 males and 1 female) who had presented with persistent anterior instability due to failed Bankart's repair. Six patients went out of contact and 24 patients (23 males and 1 female) were eventually available for final follow-up. Mean age of patients was 31.8 years (range 21–37 years) and mean follow-up was 26 months (range 24–30 months). Inclusion criteria involved a positive apprehension test or an occurrence of repeat episode of dislocation in patients who already underwent an arthroscopic Bankart's repair. Patients in whom a primary Latarjet procedure had been performed for instability were excluded from the study.

For assessment of reasons for failure of Bankart's repair, a thorough pre-operative assessment was performed that included documentation of a detailed history and a meticulous clinical examination in every patient. Radiographs of the affected shoulder were performed that included antero-posterior (internal rotation and external rotation) and axillary views. Since radiographs provide only qualitative analysis of bone loss, a three-dimensional computed tomography was additionally obtained in each patient for quantitative measurement of both glenoid (pico method[10]) and humeral head bone defects. Failed Bankart's repair (positive apprehension test) was found to be attributable to a repeat traumatic episode in 8 patients, significant humeral head bone defect in 7 and significant glenoid bone loss in 9 patients. 12 of these patients had bipolar lesions involving both glenoid and humeral head. All these candidates, after an informed consent, underwent the intended surgical procedure, the details of which have been described below.

2.1. *Surgical technique*

2.1.1. *Positioning*

Patients are prepared and draped in lateral position initially and a diagnostic arthroscopy is performed. Size of glenoid bone loss and Hill Sach's lesion are evaluated. The open Latarjet procedure is then performed after making the patient supine. A folded sheet is placed under the scapula to make coracoid more prominent.

2.1.2. *Incision*

Conventionally, for Latarjet procedure, a standard delto-pectoral approach is employed.[9] The incision begins one centimeter proximal to the coracoid process and extends around eight centimeters distally toward the anterior axillary fold. We use mini-open Latarjet technique in which a limited delto-pectoral approach is used. The skin incision begins from 1 cm above the tip of the coracoid extending 4–5 cm toward the axillary fold (Fig. 1). We keep our incision slightly medial to coracoid, so that anterior inferior glenoid neck is easily and better exposed and no vigorous retraction is required, thereby minimizing the chances of any neuro-vascular injury.

2.1.3. *Approach*

The cephalic vein is protected and retracted laterally. The anterior deltoid is split in order to reach the coracoid process