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5 Years Short Term Follow up of Latarjet Technique in Treating of Anterior Shoulder Instability with Glenoid Bone Loss

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Abstract: ***Background: In short term the Latarjet procedure is the most effective procedure, the main complication of this procedure is developing post operative arthritis. Our study aims to appraise the amount of arthritis developed in the gleno humeral arthritis post operatively. Materials and methods: There were40 procedures that were done between 2015 January to 2020 January. The functional outcome was calculated via Rowe score, and any post operative dislocations were also calculated. all the cases were evaluated with x rays post operatively foe a period of 24 months with regular visits. Results: In Rowe score there was mean increase to 89.6 from 37.9 on final follow-up, The row score in preoperative and post operative(P <.001). The recurrence rate post operatively was less than 2%. Out of the 40 shoulders, 2 developed arthritic changes which were mild. The risk factors are elderly individual, very high- sports activity, and lateral over hanging of the bone graft. Conclusion: This study showed that in a short-term follow-up has shown excellent outcomes in the cases treated for recurrent anterior glenohumeral instability with frequent physiotherapy after surgery showed best results than with no physiotherapy. Furthermore follow-up is required for the clear output of this study***

1. Introduction

Anterior glenohumeral instability is common in young athletic individuals.(1) high recurrence was shown in cases treated conservatively and was shown in several studies. (2) (3) (4)(5)(6)(7)(8)(9)Recurence of the instability was shown after Stabilization with arthroscopic procedures. (10) (11) (12) (13)Factors like, age and heavy sport activities, are the most prone of getting the recurrent shoulder instability even after conservative management and those treated with arthroscopic repair(14)(10)(11).The deficiency in glenoid showed as the main risk factor for such poor outcomes in both conservative as well as arthroscopic management. Glenoid bone loss anterior inferior in cadaveric studies showed decrease in the stability via repair of soft-tissue.(15)(16)Increase in glenoid bone defect, there is decrease in width of the glenoid and which in turn increases the chances of Hill-Sachs lesion development(17)(18). Latarjet in 1954 described that in order to treat anterior glenohumeral instability the coracoid process is transferred to the inferior surface of the coracoid and passed via subscapularis tendon and attached to the anteroinferior part of the glenoid (19)Successively, Yamamoto et al performed a study which was biomechanical and which clarified the mechanism of stabilizing in this procedure. It also reported that the key method is sling effect at the end and mid positions.(20)

2. Materials and methods

2.1 Study group

The cases were retrospectively studied for the cases performed by a single surgeon (G.W.) between 2015 January to 2020 January. Indication are: recurrent traumatic anterior instability either with or without hyperlaxity. Contraindications are: minimal instability anteriorly without Bankart lesion and habitual anterior instability. The inclusion criteria were with a minimum follow-up of 18 months. The exclusion criteria was previous failed surgeries

Operative technique

All the procedures were performed by a single surgeon. The position of the patient was a beach chair position, and vertical incision of 5-cmwas given starting at the tip of the coracoids process and extending it to the axilla. To expose the coracoid the deltopectoral interval was used. Then laterally, the incision of 1 cm given at coracoacromial ligament from the attachment at the tip of coracoid. Then medially, pectoralis minor released from coracoid, then at the junction between the horizontal and vertical aspects osteotomy was performed. The inferior cortex was prepared for the good surface then with a3.2-mm drill and created a 2 holes in the graft, by dividing horizontally at the subscapularis at the lower third of the muscle a split approach was used to access the joint. The anterior glenohumeral capsule was exposed and capsulotomy vertically was performed at medial origin, retractor was placed over the humeral head and retracted carefully to expose the anterior aspect of the glenoid. Antero inferior cortex of glenoid was prepared to expose a flat cancellous surface to promote healing. A 4.5-mmcancellous screw 35 mm in length was placed, then superior fixation done with the superior hole through the coracoid and the glenoid, and another 4.5-mm cancellous screw was placed, an adequate compression was achieved, the position was then confirmed, finally, anterior capsule was closed

Postoperative rehabilitation

After surgery, arm sling is given to the patient for 3 weeks. one week after surgery, assisted active forward flexion & external rotation were allowed as tolerated by the patient. self-mobilization was continued till 4 weeks and then patients were allowed to resume athletic activities in controlled manner. Strengthening of the shoulder was initiated 8 weeks after surgery. After 3 months the sports activity was resumed in the patients

3. Results

During the period, 40 Latarjet procedures were performed. There were 35 were men and 5 were women. All were on the dominant extremity. All cases were of recurrent dislocations. Thirty five patients were sports persons and 5 patients were involved in collision. Hill-Sachs lesion was diagnosed in 32 shoulders

Functional outcome

The mean of Rowe score showed increase post operative outcome to 89.6 from 37.9 showing (P <.001). Twenty four patients had no pain, during athletic activities 10 had pain, and during activities of daily living 6 had pain. The disappointed group included patients who had shoulder pain during sports or were apprehensive during activities of daily living. Thirty seven patients started minimal sports activity at the end of 4 months and modified to lower sports activities than before trauma, and2 patients modified their activity by completely avoiding sports activities.

Recurrence of instability

Postoperative 2 patients developed recurrence with dislocation after a newtrauma episode. which was treated with alternative procedure

4. Discussion

In both cadaveric biomechanical studies and clinical outcome studies the Latarjet procedure showed to consistently restore glenohumeral stability. Three distinct mechanisms have been described to the stability of the Latarjet procedure(20) The primary mechanism is “sling effect,” which is via reinforcement of conjoint tendon’s, the lower subscapularis provides the dynamic stabilization in the midrange and end range of abduction of shoulder and during external rotation of shoulder. (20)stability at the end range of abduction and external rotation is via capsular repair along with augmentation,(20)in one cadaveric biomechanical study in cases with capsular repair showed decreased external rotation at glenohumeral joint than in cases which were mot provided additional stability in Latarjet procedure (21).In our study it showed that this procedure gives good to excellent long-term results. In our study it showed that all the cases which underwent surgery were purely in young ages except for two cases which had trauma and it showed all of the cases didn’t develop any kind of arthritis in this procedure. Singer et al(22)(23)in his study which had a mean follow up of 20.5 years. Which showed good to excellent Rowe score irrespective of 71% of glenohumeral arthritis developed in the operated shoulders. Allain et al(24)in his study of 58Latarjet procedures which he performed with a mean follow-up of 14.3 years showed good to excellent Rowe score results in 88%,62% developed arthritis post operatively, and severe arthritis in36% of the patients. Hovelius et al(25)(26)showed outcome of 118procedures with a mean 15.2 years follow up had 98% of good to excellent outcome in Rowe scores and recurrence was about 13.8%.49% developed arthritis on their final follow-up. The most concerning part other than that of having good clinical outcomes in this procedure, there was very high occurrence of post operative arthritis. I this study cases whiched had post operative arthritis with regular physiotheraphy showed very nill which was relatively lower. We did not identify any stage1 arthritis at the end or on final follow up of the study. With our study we believe that the technique of surgery and with regular physiotheraphy showed a good influence on not developing short-termarthritis after surgery. In Allain et al and Singer et al (24) (27) they did a tenotomy to the patients for the subscapularis muscle, which they reattached after grafting. This procedure sometimes may cause external rotation deficit after the repair of the muscle, which causes glenohumeral joint contact forces which in turn leads to development of arthritis, so in Allain et al(24)(27) showed a loss of external rotation postoperatively and_ loss of external rotation in about 18 patients in which they repaired the subscapularis via double bresting procedure. Singer et al (22) showed 86% developed external rotation deficit post operatively. In our study we gave a horizontalsubscapularis splitting which doesn’t involve tendon reattachment. Maynou et al (28) in his study showed good functional outcome along with good preservation of external rotation in surgeries with a split in subscapularis than surgeries underwent tenotomy during theprocedure. This showed that in subscapularis split contributed to less rate of developing long-termarthritis. Allain et al(24) in his study showed that in about 53% of his study patients had lateral over hanging which was associated in developing arthritis. In our study care was taken not to overhang the graft which in turn gave very good results. Hovelius et al(29)they had 13.4% rate of recurrence in cases which were done with holding the graft initially with a screw. We in our study used aclassic Latarjet technique by screwing the coracoid to the glenoid with 2 screws over the inferior surface of the coracoid. This lead to giving more anatomical positioning of glenoidcompared with that of Bristow technique which gave good glenohumeral joint contact surface and forces in our study it showed that anatomical positioning of graft is very important for avoiding the recurrence of instability. Kavaja et al(30)in his study long-term results of arthroscopic Bankart repairs showed radiologically in the nonaffected shoulder they found arthritis in about twenty two percent of normal shoulders, this in turn showed that not only our procedure but natualr history of gleno humeral joint will cause postoperative arthritis. Therefore from our study it’s clear that the outcome mostly depends on surgeons technique of handling the case introperatively. the main drawback is lack of possibility for long term follow up of the cases which shifted their location due to jobs and they work which inteurn led to do long term follow up , in our study we donot have any control group to do comparison .our study is not compared to other procedures so we cannot comment on the longterm out come in the long term follow up and the efficacy of the procedure.As in our study the subscapularis

splitting is used it showed better results compare to tenotomy.

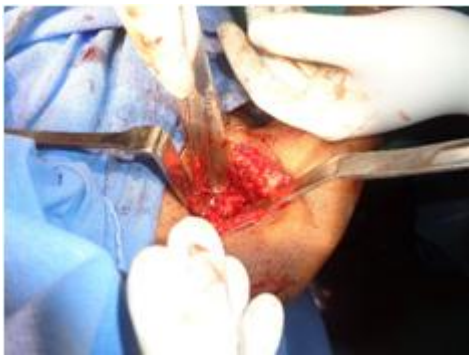
5. Conclusion

This procedure provides excellent results in short term follow up with proper anatomical placement of the graft which lead to decreased development of arthritis and along with the approach by splitting we avoided the complications caused by tenotomy of subscapularis.

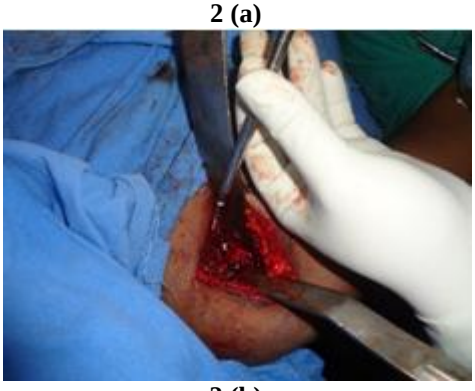
6. Disclaimer

This study was done in a strict conditions and none of the author and the relation to them have received any kind of benefit in any form from the patients and the patients were treated at utmost care and with strict following of the orders for the complete period of the study.

Figure 1: Shows the coracoid graft



2 (a)



2 (b)

Figure 2a and 2b: Shows the placement of the 2 screws

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