COMPARATIVE ANALYSIS OF CLINICAL AND FUNCTIONAL OUTCOME AFTER ARTHROSCOPIC BANKART REPAIR USING KNOTTED ALL-SUTURE ANCHOR AND KNOTLESS ANCHOR

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INTRODUCTION

- Both knotted all suture anchors and knotless anchor are used for arthroscopic Bankart repair.
- All-suture anchors have the benefit of less bone removal and occupy less volume, this facilitates insertion of more anchors, resulting in more robust labral repair and easier revision in case of failure.
- They don’t interfere with MR imaging, have uniform implant construct and do not cause problems seen in biocompatible anchors due to differential absorption of its constituents.
- Biomechanically they have been found to be equivalent to biocomposite and bioabsorbable suture anchor.

- The purpose of this study was to retrospectively evaluate and compare clinical and functional outcomes after arthroscopic Bankart repair with knotted all-suture anchor and knotless anchor.

- We hypothesized that the outcomes after arthroscopic Bankart repair would be comparable between knotted all-suture anchors and knotless suture anchors.

METHODS

- In a retrospective cohort analysis, patients who underwent arthroscopic Bankart repair without any concomitant additional lesion repair using either knotted all-suture anchor or knotless anchor, between January 2015 and May, 2018 with minimum of 2 year post-operative follow up were identified and divided into group A and B respectively.
- Their pre and post-operative functional and clinical outcomes were compared using Rowe, WOSI and change in WOSI scores.
- Recurrence rate in the two groups was also compared.

- Inclusion criterion was isolated on track Bankart lesion on arthroscopic examination which was repaired using either all-suture anchors or metal anchors and minimum post-operative follow up of 2 years.
- Exclusion criteria were revision procedures, Hill-Sachs lesion requiring remplissage, significant glenoid bone loss (greater than 20%), multidirectional instability, any other concomitant injury requiring repair such as posterior labral tear, superior labral anterior to posterior (SLAP) tear or rotator cuff tear, use of two or more different type of anchor and any patient with missing data.
- Statistical Analysis: The mean and standard deviation (SD) for the quantitative functional scores were calculated for each group. Improvements in Rowe and WOSI scores at 2 years post-operatively were compared to the pre-operative scores using paired t-test in each of the two groups separately.
- Re-dislocation rate between the groups was compared by Fischer exact test. $p < 0.05$ was considered statistically significant.

RESULTS

- A total of 41 patients in group A and 37 in group B were identified as per inclusion and exclusion criterion.
- Demographic profile of both the groups was comparable.
- There was no significant difference in clinical and functional outcome between the groups as per Rowe (pre-operative 40.12+6.17 vs 39.59+6.05, 95% CI -3.2910 to 2.2310, p value 0.70 and post-operative 90.85+12.59 vs 88.10+16.21, 95% CI -9.2617 to 3.7617, p value 0.40)
- WOSI (pre-operative 945.97+213.95 vs 995.64+181.92, 95% CI -40.37 to 139.71, p value 0.27 and post-operative 303.60+248.14 vs 383.14+330.37, 95% CI -51.4351 to 210.5151, p value 0.23) scores.
- Redislocation rates were also comparable (4.8% vs 5.4%).

DISCUSSION

- All-suture anchors have the advantage of smaller diameter of anchors, which allows anchors to be placed as close as 2 mm to each other, besides the advantage of less glenoid bone removal.
- Also, this allows surgeon to place more than 3 anchors if he feels the need for same, for more secure fixation, although there is a risk of glenoid rim fracture in such cases.
- An average of 3 all-suture anchors were used per case in our study. The small size of anchor also makes them useful in revision cases.
- In addition, the curved drill sleeve allows easier and lower placement of anchors on antero-inferior glenoid rim.
- Different mechanical studies on all-suture anchor, have reported comparable results to conventional anchors (biocomposite, bioabsorbable and PEEK anchor)

- Willemot et al. in a study on 20 patients involving patients with minimum 1 year follow up reported satisfactory clinical results using all-suture anchor.
- Gul et al in their study on 62 patients with minimum follow up of 24 months reported 91.9% good to excellent results and re-dislocation rate of 8.1 % using double loaded all-suture anchor in cases of anterior shoulder instability.
- Lee et al in a comparative study of all-suture anchor with biodegradable suture anchor in group of 67 patients reported comparative clinical outcome and post-operative stability between the groups with minimum 2 year follow-up.
- In our study, we used only 1.4mm all-suture anchor and found significant improvement in post-operative ROWE and WOSI scores with re-dislocation in 2 out of 41 patients(4.8%). This was in concurrence to previous reported results.
- Concerns have been raised about post-operative tunnel enlargement or large cyst formation in cases of all-suture anchor but clinical implications of same as far as instability repair is concerned are not yet known.

- Whilst arthroscopic repairs were acknowledged as improving patient outcomes, the complexity and steep learning curve for consistent results in arthroscopic knot tying was recognised as a significant obstacle.
- This led to advent of knotless anchor.
- They have advantage of reduced knot related complications, ease of use, faster deployment, reproducibility and low profile design and disadvantage of anchor pull out or suture breakage.
- Kocaoglu, Ng DZ, Wu et al have reported that re-dislocation rates and clinical outcomes are similar with the use of knot-tying and knotless suture anchors in arthroscopic Bankart repair.
- Wu, et al., reported that the knotless suture anchor group had lower recurrent subluxation rates than the knot-tying suture anchor group, while re-dislocation rates were similar.
- In a biomechanical study by Nho, et al. knotless suture anchors required less single load to achieve a displacement of 2 mm than knot-tying suture anchors.

CONCLUSION

- Knotted all-suture anchor showed comparable clinical and functional results as the knotless anchor for arthroscopic Bankart repair at 2 year follow-up.

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