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# EFFICACY AND OUTCOMES OF KNOTLESS VERSUS KNOT-TYING TECHNIQUES IN ARTHROSCOPIC BANKART LESION REPAIR

**KEY WORDS:** Arthroscopic Bankart Repair, Knotless Suture Anchor, Shoulder Instability.

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**ABSTRACT**

**Background:** Arthroscopic Bankart repair is routinely performed for recurrent anterior shoulder instability. Conventional knot-tying suture anchor techniques are effective but associated with technical complexity and knot-related concerns. Knotless suture anchor systems were introduced to simplify fixation while maintaining stability. **Aim:** To compare clinical and functional outcomes between knot-tying and knotless techniques. **Materials and Methods:** A retrospective comparative study was conducted on 115 patients who underwent arthroscopic Bankart repair between 2021 and 2024. Patients were divided into knot-tying (n=61) and knotless (n=54) groups. Outcomes assessed included VAS, ASES score, Rowe score, range of motion, re-dislocation rates, and subjective apprehension. **Results:** Both groups showed significant postoperative improvement. Range of motion was comparable. Re-dislocation occurred in 9.8% of knot-tying cases and 7.3% of knotless cases. **Conclusion:** Knotless suture anchor techniques provide outcomes comparable to knot-tying techniques with reduced technical complexity.

## INTRODUCTION

Recurrent anterior shoulder instability is a frequently encountered condition in young and active individuals, often resulting from traumatic labral detachment from the anteroinferior glenoid rim. Arthroscopic Bankart repair has evolved as the preferred surgical technique due to its minimally invasive nature and reliable restoration of joint stability.

Traditional knot-tying suture anchor fixation remains widely practiced; however, it is associated with technical challenges, knot stack prominence, and the potential for chondral irritation. In response to these limitations, knotless suture anchor systems were developed with the objective of simplifying fixation while maintaining adequate labral tension and capsular stability.

Despite increasing adoption of knotless techniques, published literature reports variable outcomes, and comparative data from Indian clinical settings remain limited. This study was undertaken to evaluate and compare the clinical and functional outcomes of knot-tying and knotless suture anchor techniques in arthroscopic Bankart repair.

## MATERIALS AND METHODS

A retrospective comparative study was conducted in the Department of Orthopaedics at Hi-Tech Medical College and Hospital, Bhubaneswar. Institutional approval was obtained prior to data collection.

### Inclusion Criteria

- Patients with recurrent anterior shoulder instability
- Presence of isolated Bankart lesion
- Patients treated with arthroscopic Bankart repair

### Exclusion Criteria

- Significant glenoid bone loss
- Associated rotator cuff pathology
- Previous operative intervention on the affected shoulder

A total of 154 patients were screened, of whom 115 met the inclusion criteria. Patients were divided into two groups based on the fixation technique used:

- Knot-tying suture anchor group (n = 61)
- Knotless suture anchor group (n = 54)

Postoperative evaluation included assessment of pain using the Visual Analog Scale, functional outcomes using the American Shoulder and Elbow Surgeons score and Rowe score, measurement of shoulder range of motion, documentation of re-dislocation events, and assessment of subjective apprehension. Statistical analysis was performed using appropriate comparative tests, with a p-value of less than 0.05 considered statistically significant.

## RESULTS

Both groups demonstrated statistically significant improvement in pain and functional scores following surgery. Postoperative shoulder range of motion was comparable between the knot-tying and knotless groups. Re-dislocation was observed in six patients (9.8%) in the knot-tying group and four patients (7.3%) in the knotless group. The incidence of subjective apprehension did not differ significantly between the two groups. No statistically significant difference was noted in overall functional outcomes or shoulder stability between the two techniques.

## DISCUSSION

The present study demonstrates that both knot-tying and knotless suture anchor techniques provide satisfactory clinical outcomes following arthroscopic Bankart repair. Although the knotless group exhibited a marginally lower re-dislocation rate, the difference was not statistically significant. The elimination of knot tying simplifies the surgical procedure and may reduce intra-articular knot-related complications.

These findings are consistent with previously reported studies suggesting equivalent stability and functional recovery between knot-tying and knotless fixation methods. The results support the use of knotless suture anchors as a technically efficient alternative without compromising clinical outcomes.

## CONCLUSION

Knotless suture anchor fixation in arthroscopic Bankart repair yields functional and stability outcomes comparable to conventional knot-tying techniques. The reduced technical demand and absence of knot-related concerns make knotless fixation a reliable option for managing anterior shoulder instability.

**Limitations**

The retrospective design and limited duration of follow-up restrict evaluation of long-term outcomes. Larger prospective studies with extended follow-up are recommended to further validate these findings.