

A Modified Bankart Repair Technique for the Throwing Shoulder to Prevent External Rotation Loss and Facilitate Return to Play in Baseball Players

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INTRODUCTION:

Returning to the pre-injury level of competition after anterior shoulder instability remains a major challenge for overhead athletes, particularly baseball players. A key determinant of postoperative outcomes is the preservation of external rotation (ER), as loss of ER can impair throwing performance. Arthroscopic Bankart repair (ABR) is widely used as the standard surgical technique for traumatic anterior shoulder instability, but mild postoperative limitations in ER have been reported. For throwing athletes, not only shoulder stability but also recovery of abduction and external rotation (ABER) range of motion (ROM) is critical for return to play (RTP). We consider that in addition to re-tensioning the inferior glenohumeral ligament (IGHL), appropriate repair of the anterior-superior capsule including the middle glenohumeral ligament (MGHL) without overtightening is essential. This study aimed to evaluate clinical outcomes and RTP rates following ABR with the dynamic anterior glenohumeral ligament tensioning (DAGHT) technique in baseball players.

METHODS:

We retrospectively reviewed 24 throwing shoulders of baseball players who underwent ABR with the DAGHT technique between January 2017 and April 2024. The mean age was 18.2 ± 3.8 years, including 14 high school players, 6 collegiate players, 2 adult amateur players, and 2 professional players. The average number of preoperative dislocations was 1.7 ± 1.2 . The mean follow-up period was 27.7 ± 12.9 months. The surgical procedure began with anchor placement on the anterior glenoid rim, followed by temporary reduction of the capsulolabral complex to the anchor site using a grasper. To avoid capsular overtightening, the final suture position was dynamically determined in the ABER position using the DAGHT technique. Outcomes were assessed using ROM, Jobe score, KJOC score, DASH sports module, and WOSI. Statistical analysis included Wilcoxon signed-rank and t-tests with significance set at $p < 0.05$.

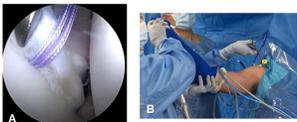
RESULTS:

The postoperative ABER at 90° abduction was significantly greater on the operative side ($95.6^\circ \pm 8.0^\circ$) than the contralateral side ($92.2^\circ \pm 7.4^\circ$, $p < 0.05$). All clinical scores improved significantly. All players returned to play, and 83.3% (20 of 24) returned to the same or higher level (full RTP). One subluxation occurred after returning due to head-first sliding.

DISCUSSION AND CONCLUSION:

Previous studies have reported relatively low RTP rates following ABR on the throwing shoulder in baseball players. Park et al. reported RTP and full RTP rates of 65% and 60%, respectively (JSES 2019). In contrast, the DAGHT technique used in our study achieved a 100% RTP rate and an 83.3% full RTP rate. This technique enables precise re-tensioning of both the IGHL and MGHL without compromising ER, potentially leading to improved functional outcomes and higher RTP rates in throwing athletes. These findings suggest that the DAGHT technique may serve as an effective surgical strategy for throwing athletes, particularly when preserving shoulder function is essential for optimal performance.

Figure 1



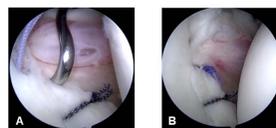
View from posterior portal, right shoulder, beach chair position.

DAGHT in ABER position technique.

(A)(B) A dynamic evaluation of the anterosuperior glenohumeral capsular ligament is performed at the mimic position in the throwing motion.

The ideal tension of the anterosuperior capsule was certified using a grasper, and the suture was passed through the capsulolabral complex.

Figure 2



View from posterior portal, right shoulder, beach chair position.

(A)(B) The suture was passed through the capsulolabral complex of the location grasped by the grasper and tied firmly.

Figure 3



View from posterior portal, right shoulder, beach chair position.

Another case of anterosuperior capsule invisible at resting position.

(A) The anterosuperior capsule was invisible at a resting position even though the anteroinferior capsule was repaired.

(B) The anterosuperior capsule was usually visible (oval) at ABER position.

(C) An ideal tension of the anterosuperior capsule was certified using a grasper.

(D) Appearance after securing the anterosuperior capsule.