

Arthroscopic Stabilization Surgery for First-Time Anterior Shoulder Dislocations: A Systematic Review and Meta-Analysis

Hassaan Abdel Khalik¹, Darius LAMEIRE, Timothy Sean Leroux², Mohit Bhandari³, Moin Khan

¹Division of Orthopaedic Surgery, ²University of Toronto, ³CLARITY Ortho Research

INTRODUCTION:

The optimal management of first-time anterior shoulder dislocations (FTASDs) remains controversial. While FTASDs have historically been managed nonsurgically, emerging Level I evidence suggests arthroscopic stabilization surgery after the first dislocation may result in improved outcomes. Prior systematic reviews have attempted to evaluate surgical versus nonsurgical management of ASDs, though the strength of their findings is limited by evaluating only a small subset of the available literature, including heterogenous surgical techniques (i.e., open and arthroscopic approaches), as well as by pooling both first-time and recurrent dislocators. Therefore, the aim of this systematic review and meta-analysis is to evaluate the efficacy of arthroscopic surgical management for first-time anterior shoulder dislocations through a comprehensive inclusion of all relevant evidence to-date.

METHODS:

MEDLINE, EMBASE, and Web of Science were searched from inception to December 18, 2022, for single-arm or comparative studies assessing FTASDs managed with arthroscopic stabilization surgery following first time dislocation. Eligible levels of evidence were I to IV. Primary outcomes included rates of shoulder redislocations, cumulative shoulder instability (redislocations, subluxations, and/or subjective instability), as well as subsequent shoulder stabilization surgery. Secondary outcomes included return to sport (RTS) rates and patient-reported outcomes. The fragility index (FI) was calculated for any included randomized controlled trials (RCTs). Potential sources of between-study heterogeneity, such as trial design, were assessed.

RESULTS:

Thirty-four studies with 2,222 shoulder dislocation were included. Of these, five studies (N=408 shoulders) were randomized trials comparing immobilization to arthroscopic Bankart repair (ABR) after a first dislocation. Another 16 studies were non-randomized comparative studies assessing arthroscopic Bankart repair following first time dislocation (ABR-F) to either immobilization (studies=8, N=399 shoulders) or arthroscopic Bankart repair following recurrent dislocations (ABR-R) (studies=8, N=943 shoulder). Mean follow up was 59.4 ± 39.2 months across all studies. Cumulative loss to follow up was 4.7% (range, 0%-32.7%). A composite of pooled redislocation, cumulative instability, and reoperations across ABR-F studies was 6.8%, 11.2%, and 6.1%, respectively. Meta-analysis found statistically significant reductions in rates of re-dislocation (OR 0.09, 95%CI 0.04-0.3, p=0.00, I²=58%) (Figure 1), cumulative instability (OR 0.05, 95%CI 0.03-0.08, p=0.00, I²=27%) (Figure 2), and subsequent surgery (OR 0.08, 95%CI 0.04-0.15, p=0.00, I²=0%) when comparing ABR-F to immobilization. Rates of cumulative instability (OR 0.32, 95%CI 0.22-0.47, p=0.00, I²=0%) (Figure 3) and subsequent surgery rates (OR 0.27, 95%CI 0.09-0.76, p=0.01, I²=3%) were significantly reduced with ABR-F relative to ABR-R, with point estimate of effect favoring ABR-F for shoulder redislocation rates (OR 0.59, 95%CI 0.19-1.83, p=0.36, I²=0%) (Figure 4). RTS rates to preoperative levels or higher were 3.87 times higher following ABR-F compared to immobilization (95%CI 1.57-9.52, p=0.00, I²=53%), with limited ABR-R studies reporting this outcome. The median FI of the five included RCTs was 2 meaning reversing only 2 outcome events rendered the trials findings no longer statistically significant.

DISCUSSION AND CONCLUSION:

Arthroscopic stabilization surgery following first-time anterior shoulder dislocations may result in lower redislocation rates, recurrent instability rates, and subsequent revision surgery rates relative to immobilization or stabilization surgery following recurrence. Arthroscopic stabilization surgery following the first dislocation may also yield superior patient-reported outcomes and return to sport rates compared to immobilization or surgery after recurrence. Available Level I evidence on the subject matter is statistically fragile and observational studies are inconclusive. Large multicenter RCTs assessing the management of FTASDs are warranted.

Figure 1 Meta-analysis of shoulder re-dislocation rates comparing arthroscopic Bankart repair following a first-time anterior dislocation versus immobilization.

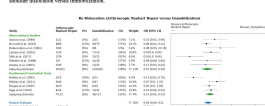


Figure 2 Meta-analysis of cumulative instability rates comparing arthroscopic Bankart repair following a first-time anterior dislocation versus immobilization.

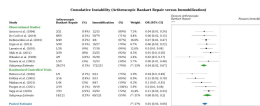


Figure 3 Meta-analysis of cumulative instability rates comparing arthroscopic Bankart repair following a first-time anterior dislocation versus recurrent dislocation.

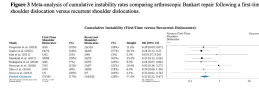


Figure 4 Meta-analysis of shoulder re-dislocation rates comparing arthroscopic Bankart repair following a first-time anterior dislocation versus recurrent dislocation.

