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REVIEW ARTICLE

Return to sport following arthroscopic Bankart repair: a systematic review

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Hypothesis and background: The purpose of this systematic review was to determine the return-to-sport rate following arthroscopic Bankart repair, and it was hypothesized that patients would experience a high rate of return to sport.

Methods: The MEDLINE, Embase, and PubMed databases were searched by 2 reviewers, and the titles, abstracts, and full texts were screened independently. The inclusion criteria were English-language studies investigating arthroscopic Bankart repair in patients of all ages participating in sports at all levels with reported return-to-sport outcomes. A meta-analysis of proportions was used to combine the rate of return to sport using a random-effects model.

Results: Overall, 34 studies met the inclusion criteria, with a mean follow-up time of 46 months (range, 3-138 months). The pooled rate of return to participation in any sport was 81% (95% confidence interval [CI], 74%-87%). In addition, the pooled rate of return to the preinjury level was 66% (95% CI, 57%-74%) (n = 1441). Moreover, the pooled rate of return to a competitive level of sport was 82% (95% CI, 79%-88%) (n = 273), while the pooled rate of return to the preinjury level of competitive sports was 88% (95% CI, 66%-99%).

Conclusion: Arthroscopic Bankart repair yields a high rate of return to sport, in addition to significant alleviation of pain and improved functional outcomes in the majority of patients. However, approximately one-third of athletes do not return to their preinjury level of sports.

Level of evidence: Level IV; Systematic Review

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Keywords: Arthroscopy; Bankart; repair; return; sport; play

In 1923 Bankart described that anterior dislocations of the humeral head can cause tears of the labrum, capsule, and periosteum from the anterior glenoid rim, and this lesion was thereafter described as the Bankart lesion.[2] The rate of recurrent anteroinferior shoulder instability following traumatic dislocation is extremely high, particularly in younger athletes,[32] necessitating surgical stabilization to give athletes the opportunity to return to sport at a competitive level.[8] Surgical stabilization for Bankart lesions can be achieved both arthroscopically and via open means, and it consists of fixing the torn labrum onto the glenoid, anatomically correcting the pathology.[28]

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The open Bankart repair was reported by Bankart[2] in 1923, with numerous techniques and advancements in the procedure developed since then. Although both arthroscopic Bankart repair and open Bankart repair are currently considered gold standards for treatment,[26] the open techniques have been shown to restrict the motion of the shoulder postoperatively, with particular emphasis on the decrease in external rotation.[5] In addition, motion loss has been a shortcoming of both arthroscopic and open procedures, although it has been more frequently reported following open procedures, likely as a result of the subscapularis takedown.[20,27] These concerns, in addition to the more extensive soft-tissue dissection and immediate postoperative pain following the open technique, have encouraged continued advancement of arthroscopic Bankart repair techniques. However, studies have demonstrated that muscle strength is equivalent after open and arthroscopic repairs at 12 months postoperatively.[15,37] While the recurrence rates for instability are lower following open Bankart repair, arthroscopic procedures have generally produced better functional results over time in terms of range of motion, and as such, arthroscopic Bankart repair has become more frequently performed.[4,10,11,30] The rate at which athletes return to sport following arthroscopic Bankart repair varies considerably across individual studies, with reported rates ranging from as low as 20% to a perfect return-to-sport rate of 100%.[31]

The purpose of this systematic review was to determine the return-to-sport rate following arthroscopic Bankart repair. Secondarily, functional outcomes in these patients were examined, including stability, pain, function, and time to return to sport.

Methods

This is a systematic review wherein the methodology was guided by the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-analyses) statement as well as a previous systematic review by our group.[7,23]

Search strategy

The PubMed, Embase, and MEDLINE databases were searched on July 15, 2017, for literature addressing return to sport following arthroscopic Bankart repair. "Bankart" and "arthroscopy" were the terms used to search for all eligible studies to be included in this review (Appendix Table S1).

Study screening

The titles, abstracts, and full texts were screened by 2 reviewers independently. The senior author (O.R.A.) resolved any disagreements regarding study inclusion between reviewers when necessary. To ensure inclusion of all eligible studies, the citation lists of the included studies were screened to capture additional studies.

Assessment of study eligibility

The study question and eligibility parameters were established a priori. Therapeutic studies of all levels of evidence, English-language studies, human studies, studies of living subjects, and studies reporting return to sport and functional outcomes following arthroscopic primary and revision Bankart repair for individuals with a confirmed Bankart lesion were included. The exclusion criteria were nonhuman studies, cadaveric investigations, conference presentations, textbook chapters, review papers, and technique guides.

Quality assessment

The Methodological Index for Non-Randomized Studies (MINORS) tool was used in duplicate to evaluate the quality of the included studies.[29] Noncomparative studies may receive a score of up to 16, while comparative studies may receive a score of up to 24. The senior author (O.R.A.) resolved any disagreements regarding study quality assessment between reviewers when necessary.

Assessment of agreement

The κ statistic was used during the title, abstract, and full-text screening to assess inter-reviewer agreement, while the intraclass correlation coefficient (ICC) was used for the MINORS scores. Substantial agreement corresponded to a κ or ICC value of 0.61 or greater; moderate agreement, κ or ICC value of 0.21-0.60; and slight agreement, κ or ICC value of 0.20 or less.[19]

Data abstraction and analysis

Data were abstracted in duplicate and recorded in a Microsoft Excel spreadsheet (version 2007; Microsoft, Redmond, WA, USA). Data regarding authors, year of publication, study design, level of evidence,[36] sample size, age, sex, follow-up, clinical and radiographic findings, management, and outcomes were obtained. The primary outcome was the rate at which patients returned to sport. To determine the pooled rate of return to sport, a meta-analysis of proportions was conducted. To establish the variance of the raw proportions, a Freeman-Tukey transformation was applied.[12] The transformed proportions were then combined using the DerSimonian-Laird random-effects model (to incorporate the anticipated heterogeneity).[9] The proportions were back-transformed using an equation derived by Miller.[22] The Cochran Q and I^2 tests were used to assess the heterogeneity. Values of I^2 between 25% and 49% were considered low statistical heterogeneity; values between 50% and 74%, moderate; and values greater than 75%, high.[16]

In instances in which data were not presented uniformly, a narrative report was provided with descriptive statistics. Minitab statistical software (version 17; Minitab, State College, PA, USA) was used to calculate means, proportions, ranges, κ values, and ICC values.

Results

Search strategy

The search yielded 2657 total studies, of which 1062 were eliminated because they were duplicate studies, producing 1595

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