Chahal J, Marks PH, et al. Anatomic Bankart Repair Compared With Nonoperative Treatment and/or Arthroscopic Lavage for First-Time Traumatic Shoulder Dislocation. Arthroscopy 2012;28: 565-575

Design: meta-analysis of clinical trials

Study question: In the setting of first-time traumatic dislocation of the shoulder, does anatomic Bankart repair lead to fewer re-dislocations than arthroscopic lavage or other nonoperative treatment?

PICOS:

- Patient population: young patients between 16 and 40 with isolated first-time traumatic shoulder dislocations
- Intervention: anatomic Bankart repair
- Comparison: arthroscopic lavage or nonoperative management with immobilization or physical therapy
- Outcomes: recurrent instability (subluxation or dislocation) at a minimum of two years followup
    - Secondary outcomes were shoulder-specific questionnaires, return to preinjury level of activity, and overall patient satisfaction
- Study types: randomized or quasi-randomized trials

Study selection:

- Databases included MEDLINE, EMBASE, CINAHL, LILACS, and the Cochrane Central Register of Controlled Trials through May 2011
- The search included studies which had appeared in a Cochrane review of operative vs nonoperative repair of dislocations (Handoll 2004), but also included studies of anatomic repair vs arthroscopic lavage which had been excluded from the Cochrane review because the control groups had had arthroscopy
- Two authors independently assessed studies for inclusion and methodological quality for trials of non-pharmacological treatments
    - Risk of bias criteria included those common to most quality criteria for randomized trials (random sequence generation, allocation concealment, complete followup, and intention to treat analysis
    - Additional consideration is given to the experience of the treating clinician for interventions requiring skill and degree of patient compliance with treatment; in addition, modifications are made for blinding in circumstances in which patients and providers cannot be blinded

Results:

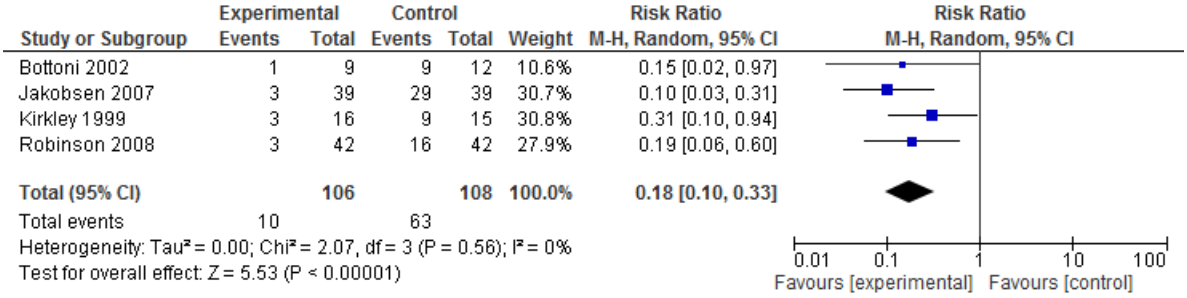
- 432 records were screened; 83 abstracts were examined, 19 full-text articles were assessed, and 4 studies, with 228 patients, were included in the meta-analysis
    - Two of these studies had been included in the Cochrane review, and two were not included in the Cochrane but were included in the present review because they had arthroscopic lavage in the control groups
- There was some variation in the quality of the trials; random sequence generation was adequately described in only one study; the experience of the surgeon was unclear in all trials, and intention to treat analysis was clear in only 2 trials
    - Blinding of patients was not a consideration in the 2 trials where rehabilitation was the control group
    - However, in the two trials where arthroscopic lavage was the control treatment, blinding was considered feasible; however, it was done in only one of the studies
- For the main outcome, meta-analysis of all four trials showed that the relative risk of recurrent instability (redislocation or subluxation) was significantly lower among patients having Bankart repair compared with other forms of treatment (the risk of recurrence in patients with Bankart repair was only 18% of the risk in control patients)
    - The results were also statistically homogeneous among the 4 studies
    - Separate analyses of the two studies of Bankart repair vs lavage showed a relative risk of 14%; for rehabilitation, the relative risk was 26%
- For the secondary outcomes, quality of life and patient satisfaction (each reported in only two studies) also showed better results for Bankart repair than for the control groups
- Three different fixation techniques of Bankart repair were used in the four studies

Authors' conclusions:

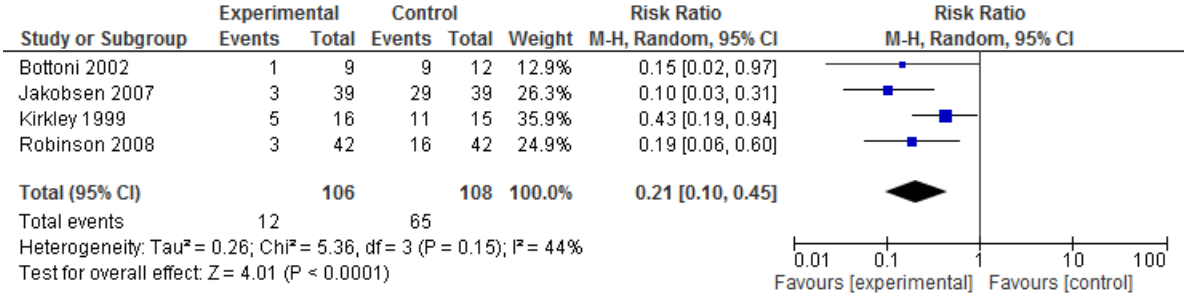
- Anatomic Bankart repair is clearly more successful than either arthroscopic lavage or nonoperative treatment in preventing recurrent instability two years after a first-time traumatic shoulder dislocation
    - The risk of recurrence after Bankart repair is about one fifth of the risk after other treatments
- The clinical follow-up period was relatively short; 2 of the 4 trials had followup of only 2 to 3 years
- The number of patients (n=228) was relatively small
- The patient population was homogeneous in terms of age and sex, but there was clinical heterogeneity in terms of rehabilitation protocols, length of immobilization, and length of followup; some studies suffered from lack of consistent reporting of patient activity levels and other variables

Comments:

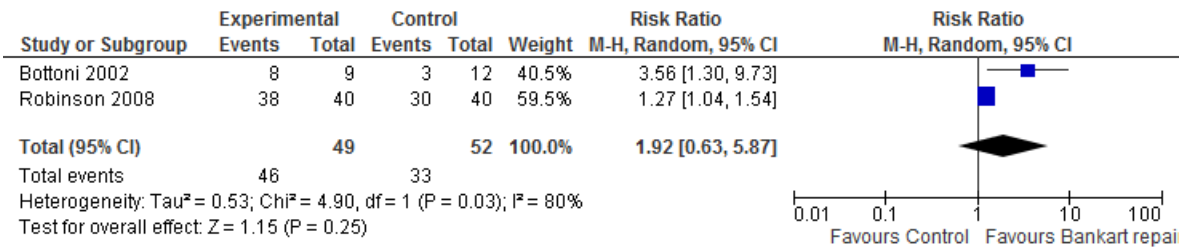
- For one of the included studies (Kirkley 1999), there was a long-term followup (Kirkley 2005) of the same study cohort
- Kirkley 1999 reported recurrence rates slightly different from those in Figure 3 part A, which reports this forest plot, with 3 of 16 patients in the Bankart repair group having recurrent instability and 9 of 15 in the control group



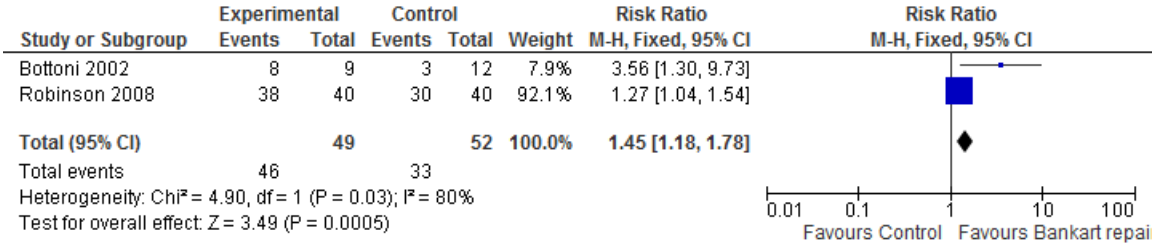
  - o
- This forest plot represents redislocations; however, the definition of recurrent instability includes subluxation, and if these are included, there are 5 such events in the Bankart repair group and 11 of 15 in the control group, which produces a small difference in the relative risk (0.21 instead of 0.18), but does not alter the conclusions



  - o
- Kirkley 2005 had an average of 79 months of followup (range from 51 to 102 months); and there had been no additional redislocations in either treatment group from the 1999 article (as in 1999, there were still 16 patients for Bankart repair and 15 patients for rehabilitation)
  - In Kirkley 1999, the primary outcome was recurrent instability; however, Kirkley 2005 says that the primary outcome was the Western Ontario Shoulder Instability index
- The authors remark that the pooled data from two studies (Figure 3 part E) showed statistically significant patient satisfaction advantages for the two studies separately, but the pooled results of the two studies were no longer statistically significant:



-
- This is simply due to the fact that when a random effects model is used for meta-analysis, the width of the confidence interval is greater than when a fixed effect model is used:



- The random effects model was preferred because of the assumption that there is heterogeneity in the results: most of the control group for Robinson (30 of 40) were satisfied, but for Bottoni, only 3 of 12 were satisfied

- In spite of problems arising from heterogeneity of studies, the conclusion that Bankart repair of first-time traumatic shoulder dislocations reduces recurrent instability is supported by the pooled results, both when the comparison is rehabilitation and when the comparison is arthroscopic lavage

Assessment:

- Overall high quality meta-analysis supporting strong evidence that in the setting of first-time traumatic shoulder dislocation in patients aged between 16 and 40, surgical Bankart repair more effectively prevents later recurrence of instability than more conservative treatment, and some evidence that the effects of Bankart repair are likely to last for five years or longer

References:

Kirkley A, Griffin S, et al. Prospective Randomized Clinical Trial Comparing the Effectiveness of Immediate Arthroscopic Stabilization Versus Immobilization and Rehabilitation in First Traumatic Anterior Dislocations of the Shoulder. Arthroscopy 1999;15(5):507-514

Kirkley A, Werstein R, et al. Prospective randomized clinical trial comparing the effectiveness of immediate arthroscopic stabilization versus immobilization and rehabilitation in first traumatic anterior dislocations of the shoulder: Long-term evaluation. Arthroscopy 2005;21(1):53-63.