SLAP Repair versus Biceps Tenodesis in Young Patients: A Systematic Review and Meta-Analysis

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INTRODUCTION:

Biceps tenodesis is becoming a more widely accepted procedure for index treatment of SLAP tears in older patients. While SLAP repair is associated with acceptable outcomes, return to sport rate, especially for overhead athletes, and concerns for higher rates of complications and reoperation leave room for improvement in treatment algorithms. There is evidence that older patients treated with biceps tenodesis versus SLAP repair have shorter recovery times, higher satisfaction, and greater return to sport, however there is limited data assessing the efficacy of biceps tenodesis for Type II SLAP tears in a younger patient population. The purpose of this study is to compare outcomes following SLAP repair versus biceps tenodesis for SLAP tears in patients under 40 years old.

METHODS:

Systematic review of PubMed (MEDLINE), Scopus, and Cochrane CENTRAL databases for studies comparing outcomes after SLAP repair and biceps tenodesis in patients <40 with at least one year of follow up identified 4/720 studies that were eligible for inclusion (Figure 1). Meta-analysis was conducted based on mean differences (MD) and odds ratios (OR) with I^2 and Cochran's Q P-values were used to assess between-study heterogeneity and total variance. Effect measures included estimate means with 95% confidence intervals (CIs).

RESULTS:

In total, 274 patients were eligible for inclusion, divided into 169 after SLAP repair and 105 after biceps tenodesis (Table 1). Most patients were male (80%) and athletes (75%) (Table 2).

Preoperative and postoperative pain Visual Analog Scale (pVAS) scores decreased significantly in both groups (SLAP repair: mean difference [MD]=4.63, CI=3.84–5.43, p<.001; biceps tenodesis: MD=4.88, CI=2.64–7.13, p<.001) with no significant difference between postoperative scores (p=0.37) (Table 3). Preoperative and postoperative American Shoulder Elbow Surgeon (ASES) Standardized Shoulder Assessment scores similarly improved significantly in both groups with no difference in final scores between groups (p=0.43). Patient satisfaction averaged 8.1/10 (CI=7.7–8.6) after SLAP repair and 8.7/10 (CI=8.0.–9.3) after biceps tenodesis without significant difference in final scores (p=0.15).

A greater proportion of patients were able to return to sport after biceps tenodesis (73%, n=45/62) as compared to SLAP repair (63%, n=71/1120) with an odds ratio of 0.54 (CI=0.26 – 1.09) (Figure 2). This finding demonstrated marginal statistical significance with p = 0.09.

Surgical complications were rare (1.4%, n=3/208) (Table 4). There was no statistically significant increased likelihood of complications between groups (OR=1.17, CI=0.14 – 9.9, p = 0.88). Reoperations occurred at a rate of 11% (n=19/169) after SLAP repair versus 1.9% (n=2/105) after biceps tenodesis. Patients undergoing SLAP repair had significantly increased odds of undergoing reoperation (OR=3.94, CI=1.16–13.4, p=0.03) (Figure 3). The most frequent reoperation procedure was biceps tenodesis, which accounted for 79% (n=11/14) of the specified revision procedures.

DISCUSSION AND CONCLUSION:

Postoperative pain, function, and patient satisfaction were equivalent after SLAP repair and biceps tenodesis in patients under 40; however, when compared to biceps tenodesis, there are higher rates of reoperation and lower rates of return to sport after SLAP repair. Younger patients with SLAP tears should be counseled that biceps tenodesis may offer similarly efficacious outcomes as SLAP repair with lower rates of reoperation.

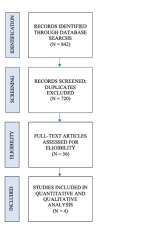

Figure 1 PRISMA Flow Diagram

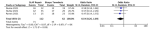
Figure 2 Forest Plot of Return to Sport

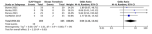
Figure 3 Forest Plot of Reoperation

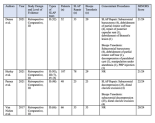
Table 1 Characteristics of Included Studies

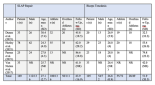
Table 2 Demographics

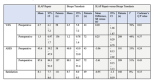
Table 3 Patient-Reported Outcomes


Table 4 Adverse Events