All-Arthroscopic Suprapectoral versus Open Subpectoral Tenodesis of the Long Head of the Biceps Brachii

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Objectives: Pathology of the long head of the biceps tendon is a recognized source of shoulder pain in adults that can be treated with tenotomy or tenodesis when non-operative measures are not effective. It is not clear whether arthroscopic or open biceps tenodesis has a clinical advantage. To date, we are not aware of any studies that directly compare clinical outcomes between an arthroscopic and an open technique for tenodesis of the long head of the biceps brachii. The purpose of this study was to determine whether a difference in outcomes and complications exists between matched cohorts after biceps tenodesis utilizing an open subpectoral versus an all-arthroscopic suprapectoral technique.
Methods: A prospective database was reviewed for patients undergoing an all-arthroscopic suprapectoral or open subpectoral biceps tenodesis. Adult patients with a minimum 18-month follow-up were included. Patients undergoing a concomitant rotator cuff or labral repair were excluded. The groups were matched to age within 3 years, sex, and time to follow-up within 3 months. Pain improvement, development of a popeye deformity, muscle cramping, post-operative ASES scores, satisfaction scores, and complications were evaluated.
Results: Forty-six patients (23 all-arthroscopic, 23 open) patients with an average age of 57.2 years (range, 45-70) were evaluated at a mean 28.7 months (range, 18-42) follow-up. No patients in either group developed a popeye deformity or complained of arm cramping. There was no significant difference in mean ASES scores between the open and all-arthroscopic groups (92.7 vs. 88.9, P = 0.42, Table 1). Similarly, there was no significant difference between patient satisfaction scores (8.9 vs. 9.1, P = 0.73). Eighteen patients (78.3%) in the arthroscopic cohort and sixteen patients (69.6%) in the open cohort fully returned to athletic activity (P = 0.50). There were no complications in the all-arthroscopic group. There were two complications in the open group (superficial incisional erythema, and brachial plexopathy) that resolved by final follow-up.
Conclusion: Biceps tenodesis is a reliable treatment option for pathology of the long head of the biceps that may avoid arm cramping and a cosmetic “popeye” deformity that can occur following tenotomy. Open subpectoral and all-arthroscopic suprapectoral are two commonly used techniques to reattach the biceps tendon distal to the bicipital groove. In this study, patients undergoing an all-arthroscopic tenodesis experienced similar pain relief, shoulder function, and return to athletic activity as patients undergoing an open tenodesis. An open subpectoral technique may increase the risk of complications secondary to a larger incision and increased surgical dissection. Larger studies with longer follow-up would help delineate the long-term effects and potential differences between an all-arthroscopic suprapectoral and open subpectoral biceps tenodesis.

Table 1: Patient Demographics and Outcomes after Arthroscopic or Open Biceps Tenodesis

	All-Arthroscopic Tenodesis				Open Subpectoral Tenodesis				t-test
Demographics	*Average*	*SD*	*Range (min-max)*		*Average*	*SD*	*Range (min-max)*		*P-value*
Age (years)	57.3	6.8	45	69	56.9	6.7	46	70	0.88
Follow-up (months)	30.4	7.3	21.1	44.9	29.9	6.3	21.7	42.6	0.81
Outcome Scores	*Mean*	*SE*	*95% CI*		*Mean*	*SE*	*95% CI*		*P-value*
ASES (0-100)	88.9	3.4	81.7	96.1	92.3	3.2	85.7	99.5	0.42
Satisfaction (1-10)	9.1	0.3	8.5	9.6	8.9	0.3	8.4	9.5	0.73

SD = Standard Deviation, SE = Standard Error, CI = Confidence Interval, ASES = American Shoulder and Elbow Score

The Orthopaedic Journal of Sports Medicine, 3(3)(suppl 1)
DOI: 10.1177/2325967115S00011