

A Criterion Based Sling Weaning Progression (SWEAP) and Outcomes Following Elective Shoulder Arthroscopic Surgery in an Active Duty Military Population

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Background/Purpose: Extended post-operative immobilization after shoulder surgery can lead to poor objective outcomes and decreased patient satisfaction. Minimal clinical evidence is available to guide post-operative protocols in sling weaning progression. We hypothesize that criterion-based early sling weaning protocol may yield more rapid improvements in quality of life with decreased pain and improved sleep habits with continued favorable outcomes at six months post-operatively.

Case Description: A sample of 82 active duty service members (ADSM) underwent elective shoulder arthroscopic surgery: 12 superior anterior to posterior labral (SLAP) repairs, 22 glenohumeral stabilization procedures, 10 rotator cuff repairs (RTCR), 33 sub-pectoral biceps tenodeses, 2 biceps tenotomies, 13 distal clavicle resections (DCR), 10 coracoplasties, 38 sub-acromial decompressions (SAD), and 2 pectoralis major repairs performed by three staff orthopaedic surgeons. One physical therapist progressed patients through the SWEAP protocol for each procedure and documented pain levels, sleep habits, and the decrease in sling use throughout the SWEAP protocol. Pre-operative and six month post-operative Quick Disability of the Arm, Shoulder, and Hand (qDASH) and Shoulder Pain and Disability Index (SPADI) scores were obtained as a measure of occupational return. The ability to perform an Army Physical Fitness Test including push-ups, sit up, and a timed 2 mile run was recorded at six months post-operatively as a demonstration of physical fitness return.

Outcomes: All patients (N=82) completed sling weaning before the individualized SWEAP goal with an overall average of 16.6 ± 5.0 days (SLAP repairs 19.5 ± 5.7 , glenohumeral stabilization procedures with 4 or less anchors 16.1 ± 5.5 , glenohumeral stabilization procedures with 5 or more anchors 19.8 ± 3.3 , RTCR 23.1 ± 4.5 , biceps tenodesis/tenotomy procedures 13.5 ± 2.3 , and pectoralis major repairs 20.0 ± 1.4). As patients steadily progressed out of the sling at 1 hour, 2-3 hours, and half day periods, pain scores decreased at 5.0, 3.7, and 2.1 (0-10 pain scale), respectively. Patients obtained 6-7 hours of sleep or returned to normal sleep habits at 10.9 days post-operatively. Pre-operative qDASH and SPADI scores improved from average of 38.8 to 2.4, and 46.4 to 3.3, respectively. All patients were able to return to a deployable status. 30 (36.6%) patients required a permanent profile for the push-up portion of the APFT at six months post-operatively with 7 of these patients also requiring running restrictions.

Discussion: Early improvement in quality of life indicators can be obtained in the initial post-operative period with more aggressive sling weaning using a criterion based SWEAP protocol. Patients demonstrated excellent outcomes with return to occupational and physical fitness activities.