

## ***Adhesive Capsulitis Following Rotator Cuff Repair***

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**Background and Purpose:** Successful rehabilitation following rotator cuff surgery is dependent upon restoring passive motion to the glenohumeral joint without compromising the repair. Some surgeons regard rotator cuff repair as a shoulder tightening procedure. (11) Often this poses a significant challenge to therapists, surgeons, and patients. When passive range of motion is difficult to achieve the options available to correct this issue are limited. One surgical option gaining popularity amongst shoulder surgeons is arthroscopic capsular release performed either at the time of surgery or post operatively. (1,2) The following case study outlines the clinical decision making process for a patient that had a large rotator cuff repair and failed to progress in therapy due to stiffness.

**Case Description:** In August 2007 a 67 year old female with acute shoulder pain from a lifting injury presented for initial consult. Findings included normal x-ray, mild impingement sign, and slight loss of motion behind her back, soreness on resisted testing but no weakness. An MRI read full thickness tear in the supraspinatus without retraction. The accuracy of these findings was questioned by the orthopedist. The patient was treated with a subacromial injection and referred to physical therapy for two weeks. She was discharged with full active and passive motion and 4/5 strength. Patient maintained good pain relief for 4 months. In March 2008 she returned because of pain interrupting sleep and limiting some activities. She elected to proceed with arthroscopic surgery in July 2008. Arthroscopy revealed a large full thickness tear of her supraspinatus and infraspinatus with posterior retraction necessitating open repair. A convergent type repair of the cuff and a bicep's tenodesis were performed. Physical therapy started one day post- operatively. At 6 weeks the patient achieved 150 degrees of elevation, 80 degrees of glenohumeral abduction, and 65 degrees of internal and external rotation in mid-abduction on passive testing supine. Assessment of patient's response was considered good in light of a large tear. Over the next 4 weeks passive motion did not progress and mobilization led to increased pain with no improvement in motion. At 12 weeks stretching and mobilization were curtailed to protect her repair. Between 12 and 16 weeks the patient's passive motion regressed but her active motion improved. At 16 weeks her passive motion was 135 degrees of elevation, 75 degrees of glenohumeral abduction, 80 degrees of external rotation in mid abduction and she could reach the small of her back. Active motion progressed to 80 degrees of elevation, 70 degrees of glenohumeral abduction and 60 degrees of external rotation. An external rotation lag sign was negative. However, due to her lack of progress an MRI was ordered but artifact made interpretation difficult. The opinion of her therapist and surgeon was that stiffness was preventing progress. Following discussions between the therapist and another shoulder surgeon the patient was referred for a second orthopedic surgical consult. The second surgeon also felt limited passive restrictions, more so than weakness, were resulting in her lack of progress. At 5 months post cuff repair the patient underwent a circumferential capsular release with removal of dense adhesions in the subacromial space, subcoracoid space and rotator interval. The cuff repair was intact. The patient resumed physical therapy the next day with passive motion of 165 degrees of elevation, 110 degrees of

glenohumeral abduction, normal internal rotation and 80-85 degrees of external rotation in mid-abduction. Patient continued therapy for another 6 weeks. She was discharged with full range of motion and strength as follows; 3+ in abduction, 4- in elevation and external rotation and 4+ in internal rotation. At 15 months post cuff repair the patient has maintained her progress and achieved an outcome score of 83 on the PENN and the ASES shoulder score.

**Discussion and Conclusions:** Physical therapists are charged with restoring passive and active motion following rotator cuff surgery. This task presents a challenge between achieving motion and not compromising the repair. Several factors affect motion including size of the tear, difficulty of the repair, preoperative motion, time period for immobilization, effectiveness of therapy and patient compliance. This case study highlights the factors used in selecting an appropriate patient for arthroscopic capsular release. In this particular case clinical decisions were based on normal passive and active motion preoperatively, patient compliance, passive motion having failed to progress in therapy and the repair appeared intact. Possible causes for this patient's secondary adhesive capsulitis could be the size of the tear or the difficulty of the repair leading to reduce capsular volume. A capsular release at the time of her repair might have eliminated the need for additional surgery. (3, 5, 8, 11) Another possible cause for her stiffness may have been the biceps tenodesis creating scarring and capsular contracture. A tenolysis of the biceps might have been a better decision. A surgeon's options for addressing stiffness include; intra-articular injection, manipulation or arthroscopic release. A cuff repair with secondary adhesive capsulitis might better be served by arthroscopic release. An injection might compromise healing in the repair and a manipulation, with less than well directed forces, could disrupt the repair. In this particular case an important component in the decision making process was the intuition of the surgeon and therapist. Both were confident in identifying an appropriate patient for this clinical pathway.

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