



General Rehabilitation Guidelines

Cuff Tear Arthropathy Protocol for Non-Operative Treatment

Samir Patel, MD

General Information

- Cuff tear arthropathy is a special type of shoulder arthritis that occurs as a result of a massive, usually irreparable, rotator cuff tear. In addition to the loss of tendon tissue, the rotator cuff muscles undergo significant atrophy and replacement by fatty tissue. Although all aspects of the underlying cause of this condition are not fully understood, the pathomechanics of cuff tear arthropathy are well defined. Loss of the humeral head depressor effect of the rotator cuff leads to static superior migration of the humeral head. This causes abrasion of the humeral head on the acromion and the formation of a "glenoacromial articulation." The greater tuberosity becomes rounded or "femoralized." Because the stable fulcrum for glenohumeral rotation is lost, attempts to elevate the arm result in marked substitution patterns whereby the upper trapezius muscle raises the arm through the scapulothoracic joint. Although some fibers of the subscapularis and teres minor tendons may remain, there is insufficient strength to stabilize the humeral head. Emphasis must be placed on developing the secondary force couples involving the shoulder girdle muscles like those between the serratus anterior and trapezius and between the pectoralis major and latissimus dorsi.
- *Rehabilitation Considerations*
 - Stiffness in the shoulder capsule will worsen pain by increasing the pressure of abrasion of the humeral head on the acromion. A balanced capsular flexibility program emphasizing the posterior capsule is critical to preserving mobility
 - Compensatory scapulothoracic muscle recruitment is a typical feature of this condition. Specifically, the upper trapezius muscle "hikes up" the scapula during attempts to elevate the arm. When this occurs, a stable fulcrum for elevation cannot be achieved and the deltoid muscle is placed at a mechanical disadvantage. One of the goals of therapy is effective scapular stabilization that preferentially strengthens the retractor and depressor muscles. By creating a fixed and stable platform, scapular stabilization provides a fulcrum for the deltoid to effectively elevate the arm.
 - Aquatic programs may be very beneficial in treating this condition and may be instituted at the outset of treatment

Outpatient Phase 1: Acute Phase

- **ROM**
 - Instruct in home program, and begin, pendulum exercises
 - Instruct in home program, and begin, general flexibility program with emphasis on posterior capsular stretching and anterior chest wall stretching
 - HEP should be done 2-3x per day
 - Pulleys with hands supinated to clear greater tuberosity
 - Glenohumeral mobilizations as tolerated
 - Core flexibility as needed

- **Strength**
 - Instruct in home program and begin postural control exercises
 - May include scapular taping to discourage compensatory muscle recruitment patterns
 - Cuff: any remaining cuff attachment should be strengthened to improve the head depressor effect
 - Start with submaximal isometrics with emphasis on ER/IR
 - Progressive two-hand supine press
 - Deltoid: all components of deltoid should be strengthened with emphasis on anterior deltoid
 - Start with submaximal isometrics
 - Scapular Stabilization
 - Isometric retraction, depression and shrugs
 - UBE in reverse: start with low resistance
 - Table top ball rolls and scapular clocks
 - Aerobic conditioning
- **Other:**
 - Modalities to decrease pain and inflammation
 - cryotherapy

Outpatient Phase 2: Recovery Phase

- **ROM:**
 - Continue full flexibility program with goal of motion symmetric with contralateral side
- **Strength**
 - Posture:
 - Continue postural improvement exercises and assessment for substitution patterns
 - Cuff:
 - Begin isotonic strengthening of remaining cuff muscles with low resistance high repetition exercises using therabands or light dumbbells
 - Emphasize IR/ER
 - Start with eccentric and progress to concentric
 - May progress from neutral to progressive degrees of abduction as able
 - Deltoid
 - Begin isotonic strengthening with low resistance high repetition exercises using therabands or light dumbbells
 - Emphasize anterior deltoid in combination with scapular stabilization
 - Scapular Stabilization
 - Prone and seated rows with exaggerated scapular retraction
 - Push-ups with a plus: wall, table, floor
 - Table-top ball rolls and wall washes as tolerated
 - UBE in reverse with progressive resistance
 - **Notes:** reeducation of substitution patterns should be addressed with emphasis on preventing upper trapezial recruitment during shoulder elevation
 - Scapular taping may be used as tolerated to facilitate this

- Continue aerobic conditioning
- **Other**
 - Continue modalities to decrease pain and inflammation as needed

Outpatient Phase 3: Maintenance phase

- **ROM**
 - Instruct in HEP for comprehensive flexibility program
- **Strength**
 - Instruct in HEP for maintenance cuff, deltoid and periscapular strengthening
 - Encourage aerobic activities that combine motion and strength like rowing and swimming
 - Maintenance aerobic conditioning program