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SPORTS MEDICINE ORTHOPEDIC SURGEON

Rotator Cuff Repair Protocol – Medium to Large – good tissue quality

1– 4 cm

Use this protocol for large tears that were non-retracted, or were retracted but easily reduced, with good tissue quality.

Phase I – Immediate postoperative phase

Goals: Protect the anatomic repair
Prevent negative effects of immobilization
Promote dynamic stability
Diminish pain and inflammation

Principles:
Progress through rehab once specific criteria met
Follow evaluation based protocol, but adapt to individual
Remember biologic healing tendon to bone (6-8 weeks or longer)

RTC tear size:	
small	< 1cm
medium	1-3 cm
large	3-5 cm
massive	> 5 cm

Week 0-2 (Day 1-14)

- Sling for 4 weeks, may sleep in sling 4-5 weeks per MD
- Shoulder shrugs/squeezes – scapula movement only, not arm
- Elbow/hand ROM
- Hand gripping exercises
- Cervical ROM, lateral flexion
- Passive ROM exercise:
  - Flexion/scaption to tolerance–PROM, NOT stretching – use pain and end feel as guide
  - ER/IR PROM in 45°abd in the scapular plane (on a towel roll or wedge), gentle ROM – not stretching.
  - ER at 0° not done yet due to more stress on the supraspinatus when the arm is adducted
- Codman's exercises – perform closed chain with hand on a swiss ball or on a table with a cloth if patient cannot relax or if arm is heavy (Roll the ball with arm straight- use ball for support, do not weight bear through arm), or perform with the elbow bent, hand touching shoulder, patient uses opposite upper extremity with contact at involved elbow to passively raise, lower and perform circles with involved arm
- Cryotherapy, EGS

Week 2

- Continue PROM (not stretching): progress to tolerance flexion/scaption (PROM NOT stretching), ER/IR to tolerance in the scapular plane (towel roll or wedge) in 45 & 60° abduction – caution with excessive IR.
- Submaximal isometrics for shoulder musculature – shoulder in scapular plane with towel roll between arm and body, elbow flexed 90º - flexion, extension, external rotation, internal rotation, adduction and abduction (no abduction isometric with open repair), bicep isometric
- Gentle oscillation – grade I-II mobilization of Glenohumeral and Scapulothoracic joint
- Scapular protraction, retraction, depression manual resistive exercise in sidely with a towel roll between arm and body, hand contacts on scapula
- Wand exercises supine on towel roll – ER/IR scapular plane

Week 3-4: (Day 15-28)

- Discontinue use of sling during the day after 4 weeks completed – may sleep in sling 1 more week (MD decision)
- Continue PROM – add caudal glide as needed.
    - Flexion and scaption to tolerance
    - ER to tolerance in 45 to 90º abduction with arm on towel roll or wedge (scap plane) (less stress on supraspinatus in 45 to 90 degrees than at 0 degrees of abduction)
    - **Perform ER only in 45˚ abduction for subscapularis tear**
    - IR to tolerance in 45 º abduction week 3, 45 & 60° abd scap plane week 4 – caution with excessive IR
    - medium-large tears: table slide week 3, pulley week 3, wand or assist opposite UE flexion/scaption week 4
- Begin rhythmic stabilization (submax) in a supported position (on a towel roll, elbow bent)
- Week 3-4: table top exercises: scapular protraction-retraction, elevation-depression (ball rolls/towel slide). Weight of arm supported by ball or table.
- Week 4 perform balance point exercises – passively raise the arm to 90°, and have the patient move the arm from 90 to 100° back and forth in a protracted position
- Week 4: low row (lower trapezius table push isometric) –stand with table at side, push back on table with palm and lift chest (sternal lift/scapular retraction)
- Active punches (arm raised to 90 by therapist, then punches (protraction/retraction), then therapist lowers arm)
- Week 4 active assistive sidely ER with towel roll between arm and body (with assist of therapist)
- Week 4: row to plane of body

Week 5-6: (Day 29-42)

- UBE for ROM only (slowly, no resistance)
- Continue PROM – continue ER stretching in 45 to 90°, progress IR stretching in 60-90° abd as tolerated on a towel roll. Week 6 add stretches into ER in neutral adduction (arm by side) Continue inferior & posterior glides if needed. Goal elevation 160°, ER 80-90°, IR 50-55°
- Add wall crawl flexion week 6
- Theraband bicep and tricep with the arm by the side (no glenohumeral motion)
- active assistive flexion and D2 supine, progressing to active week 6 (start with elbow flexed and progress to straight as tolerated) – start with arm on a towel roll
- Progress to active sidely ER with towel roll between arm and body no resistance week 5, 1# dumbell week 6
- Increase ROM of balance point ex to 60 to 120 (actively move arm between these angles once therapist places arm in 90 degrees elevation)
- Begin unsupported rhythmic stabilization in 90° of elevation with the scapula protracted, continue supported ER/IR RS
- Prone scapular exercises: extension to plane of body with palm forward (humeral external rotation), add dumbell to row.
- Push up plus on wall (elbows stay straight, scapular pro and retraction only)
- Lawnmower: start with trunk, hip an knee flexion, arm extended across body come to upright, scapular retraction, slight ER

Phase II – Intermediate Phase: Moderate Protection Phase

Goals: Gradually restore full ROM and capsular mobility
Restore muscular strength and balance, normalize scapulohumeral rhythym
Preserve the integrity of the surgical repair
Gradual return to functional activities

***Patient must be able to elevate arm without shoulder or scapular hiking. If unable – continue scapular and stabilizing exercises**

Week 7-9: (Day 43-63)

- Continue PROM all angles to tolerance – goal: full functional ROM (for overhead athlete – work up to 110-115° ER, 60-70°
- Week 8-9 add sidely IR self stretch, towel IR stretch if needed (avoid if good ROM), prone chicken wing stretch week 9 (towel roll under anterior shoulder) if needed (young/athletic population); hangs, lat pull stretch if elevation limited (monitor impingement)
- Un-supported rhythmic stabilization in various degrees of elevation, and in the scapular plane ER/IR in open and closed chain – ball on wall
- Progress push up plus exercise – scapula motion only, keep elbows straight – work to table, quadruped, etc
- Progress supine flexion and D2 to dumbell, then standing flexion, scaption to 90°, progress to abd to 90° if good SH control. (if able to do without hiking). Increase ROM flex/scaption as tolerated if no hiking to 120-140°
- Wall washes – incorporate squat with scapular retraction, to overhead arm with protraction as knees/hips extend
- Progress ER/IR exercises with dumbell and theraband
- Lower trapezius theraband bilateral ER with scapular retraction (hold 20ºER and pull scapula down and back) – towel roll between arm and body bilaterally
- D2 standing active
- Prone horizontal abduction palm down, progressing to thumb up and thumb down as tolerated, add prone flexion @ 135º (may require assistance to complete full ROM to plane of body)
- Standing punches/retractions several planes (forward/lateral), with step lunges
- Standing rows/extension with theraband
- Progress lawnmower to resisted

Week 9-10: (Day 64-70)

- incorporate kinetic chain with active lateral raises with lateral lunges, step up with overhead press, no weight, progressing to light dumbell
- Row with external rotation active, progressing to dumbell as tolerated (if functional need)
- Active/active-resisted ER at 90: incorporate trunk/hips by starting out with trunk and hips flexed & arms outstretched, and come into upright/extended position with 90/90 abd/ER
- Progress standing flexion, scaption D2 ROM as tolerated to 160º without hiking, abduction to 90º - progress to dumbells as tolerated
- Progress ROM to functional demands (ie goal total passive motion for a pitcher 180º combined ER/IR)
- ER/IR with tubing at 90º abduction week 10 medium to large tears. May place upper arm on a bolster for support if unable to hold arm in 90/90 position – work to unsupported as tolerated – can also do bilateral forward reach with squat to upright 90/90 abd/ER
- Bodyblade ER/IR at side, flexion, scaption, Impulse ER/IR at side

Week 10-14: (Day 71-98)

- Begin manuals once at least 3# can be lifted throughout the ROM: supine D2, sidely ER, prone horizontal abduction palm down, thumb up, thumb down, flexion at 145º, row
- Progress manuals to row with ER conc/ecc, 90/90 ER conc/ecc, and D2 conc/ecc if overhead athlete or functional demand
- Seated press up

- Start weight training with anterior shoulder protection techniques (do not allow arms behind plane of body)
- Isokinetics scapular plane (180, 240, 300º/second)
- Push up plus – progress to over a table, hands on balls or over a swiss ball. Ball walk outs/box walk for serratus.
- Standing rhythmic stabilization drills – open and closed chain. Can increase difficulty with use of theraband/stand on dynamic surface.

Phase III – Minimal Protection Phase

Goals: Establish and maintain full functional ROM and capsular mobility
Improve muscular strength, power and endurance
Initiate functional activities

Criteria to enter Phase III:

1. Full non-painful ROM
2. Good scapulohumeral rhythm
3. Muscular strength good grade or better (4/5 or better)
4. No pain or tenderness

Week 12-15: (Day 78-105)

- Initiate plyometric program if above criteria met – start 2 handed and progress to 1 handed
  2 handed: chest, rotation, woodchop, forward and backward toss (simulate forehand/backhand swing)for tennis), overhead
  1 handed: semicircle and 90/90 wall dribble, ER flip, kneeling D2, theraband ER/IR plyo, progressing to 15' throw for mechanics (throwers only)
- Initiate putting and chipping portion of interval golf program

Week 16-18: (Day 106-126)

- Biodex test in 90/90 position: 180º/second 10 reps and 300º/second 15 reps bilaterally
- Initiate interval sport/throwing program, progress golf program if attached criteria are met and MD clears

Criteria to Initiate an Interval Sport Program

1. Good tolerance to overhead motion - full functional painfree ROM
2. Negative impingement signs
3. 85-90% strength of external and internal rotation compared to the opposite UE on Biodex
4. External/Internal strength ratio at least 62-65%
5. Microfet criteria met (at least low average)

Discharge/Criteria to Return to Sport

1. Isokinetic Testing:
   External/Internal rotation ratio at least 65% dominant arm, 75% non-dominant arm.
   Peak Torque to body weight ratio at 300 degrees per second ER at least 14 and IR at least 20.
   Peak Torque to body weight ratio at 180 degrees per second ER at least 15 and IR at least 19.
   ER and IR strength at least 90% of uninvolved UE.

2. Completed interval sport program without symptoms.
3. 5/5 MMT all shoulder and scapular groups.
4. Microfet normal.
5. Able to perform all daily activities without restrictions.
6. Clearance from MD.

Generally no return to contact sports for at least 6 months.