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SPORTS MEDICINE ORTHOPEDIC SURGEON

Rotator Cuff Repair Protocol- Large to Massive

Greater than 4 cm

Use this protocol for large to massive tears/tears in which the tear was retracted/scarred down/decreased tissue quality

Phase I – Immediate postoperative phase

Goals: Protect the anatomic repair -do not overstress healing tissue
Prevent negative effects of immobilization
Promote dynamic stability
Diminish pain and inflammation

Priciples:

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)

Talk to MD – Week 1 for large to massive tears he may hold PT – only see 1 visit post op for dressing change, instructions on precautions (issue handout), use of sling, elbow, forearm, wrist ROM, instructions on how to lean over to bathe, dress, etc.

- 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 and scaption to tolerance – PROM, NOT stretching (goal at least 105° - no more than 120° - unless manip or history tightness – communicate with MD)
  - ER/IR PROM in 45°degrees of abduction in the scapular plane (on a towel roll or wedge), gentle ROM – NOT stretching. At this phase, limit ROM to 45° unless history of stiff shoulder – communicate with MD
  - ER at 0° not done yet due to more stress on the supraspinatus as the arm is adducted
  - Cryotherapy, modalities as indicated
- 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

Week 2

- Continue PROM (not stretching): progress to tolerance: flexion/scaption at least 125 - max 145°, ER/IR to 45° in scapular plane/ 45 abd.
- 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 – gentle resistance

- Wand exercises supine on towel roll – ER/IR scapular plane – to 45°

Week 3-4: (Day 15-28)

- Discontinue use of sling during the day after 4 weeks completed (1 more week at night)
- Continue PROM
    - Flexion and scaption to tolerance – to approximately 145-160°
    - ER to tolerance in 45° abd scapular plane, and in 90º abduction scapular plane arm on towel roll or wedge to 45°. (Less stress on supraspinatus in 45 to 90 degrees than at 0 degrees of abduction). Week 4 progress ER at 90° scapular plane to tolerance.
    - **Perform ER only in 45° abduction for subscapularis tear**
    - IR to tolerance in 45 º abduction week 3, 45 to 60 degrees of abduction week 4 scapular plane – caution with excessive IR
- add caudal glide as needed.
- Large-massive tears: table slide week 3, pulley UE flexion/scaption week 4
- Begin rhythmic stabilization (submax) in a supported position (on a towel roll, elbow bent)
- 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: table top exercises: protraction-retraction, elevation-depression (ball rolls/towel slides). Weight of arm supported by ball or table
- Week 4-5: low row (lower trap table push isometric) – stand with table at side, push back on table with palm and lift chest (sternal lift/scapular retraction)

Week 5-6: (Day 29-42)

- UBE for ROM only (slowly, no resistance)
- Continue PROM – continue ER/IR stretching in 45 to 90° in scap plane. Continue inferior glides /posterior glides if needed. IR stretching in 60 degrees week 5, 90° week 6.
- Wand flexion
- Theraband bicep and tricep with the arm by the side (no glenohumeral motion)
- Continue balance point exercises – progress ROM 90-120°
- Supine punches in 90° (therapist raise arm, and lower arm from this position)
- Begin unsupported rhythmic stabilization in 90° of elevation with the scapula protracted
- **Large-Massive tears**: Week 6: active assistive flexion and D2 supine (with help of therapist) –start with elbow slightly flexed, week 6 active assistive sidely ER with towel roll between arm and body.
- Week 6 - Prone scapular exercises: extension to plane of body, row at 0°
- Week 6 - Lower trapezius table lift – (standing with table at side, push back on table with palm and stick chest out)

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

***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. Progress to stretching ER in neutral add (arm by side)
- Week 9 - add towel IR stretch if needed (avoid if good ROM)
- Week 9 add sidely IR self stretch, prone chicken wing stretch week 9-10 for younger/athletic population (towel roll under anterior shoulder); 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, open and closed chain
- Active sidely ER exercise with towel between arm and body. Keep scapula retracted
- Push up plus exercise – scapula motion only, keep elbows straight. Start on wall and progress
- Wall washes – incorporate squat with scapular retraction, to overhead arm with protraction as knees/hips extend
- **Large to Massive tears:** supine flexion and D2 progress to active, progressing to 1# dumbell. Progress to then standing raise to 90° week 8. (if able to do without hiking)
- Lawnmower exercise: start with trunk flexion, arms extended across body ,then come to upright, scapular retraction, slight ER

Week 9 add:

- Progress ROM to functional demands week 9-10.
- Progress ER/IR exercises – with towel roll between arm and body – sidely with weight and standing with theraband in 20º abduction (towel roll between arm and body) – make sure scapula is stabilized
- Standing punches/retractions several planes (forward/lateral), with step lunges
- D2 standing active, progressing to weight when good GH control
- Progress standing flexion and scaption to 120-160° (no hiking), add abd to 90° week 9-10
- Lower trapezius theraband bilateral ER with scapular retraction (hold 20ºER and pull scapula down and back) – towel roll between arm and body bilaterally
- Standing ext & row to plane of body with theraband
- Prone horizontal abduction in neutral, and prone flexion @ 135º (may require assistance to complete full ROM to plane of body), progress prone extension to palm forward

Week 10-11: (Day 64-77)

- Progress ROM to functional demand
- Progress horizontal abduction to thumb up and thumb down as tolerated
- Incorporate kinetic chain with active lateral raises with lateral lunge, step ups with overhead press – start no weight and progress to dumbell
- Progress standing flexion/scaption to 160°, abd to 90°
- Prone row with ER active, progressing to weight (if functional need)

Week 12 - 14: (Day 78-98)

- Standing Rhythmic stabilization in the open and closed chain
- Body blade ER/IR at side, flexion/scaption, Impulse ER/IR by side
- ER/IR with tubing at 90º abduction (May place upper arm on a bolster for support if unable to hold arm in 90/90 position) – (if there is overhead functional need) – do not allow arm to get behind plane of body
- Active bilateral ER: start with arms forward, trunk, hips and knees flexed, extend to upright 90/90 abd/ER position

- Seated press up
- Start weight training with anterior shoulder protection techniques

Week 14-16: (Day 99-112)

- 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
- Isokinetics scapular plane (180, 240, 300°/sec) ER/IR if functonal need

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 16:

- **Week 16 (depending on criteria above):** 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: 2# semicircle and 90/90 wall dribble, ER flip, kneeling D2, theraband ER/IR plyo, progressing to 15' throw for mechanics (throwers only- ball baseball weight)
- Initiate putting and chipping portion of interval golf program

Week 19-20: (Day 127

- 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.