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Large/Massive Arthroscopic Rotator Cuff Repair Protocol

This rehabilitation protocol has been developed for the patient following a rotator cuff surgical procedure for large, massive, complex, and revision repairs. The protocol will vary in length and aggressiveness depending on factors such as:

Size and location of tear
Quality of the repaired rotator cuff tissue
Presence of additional procedures such as biceps tenodesis
Degree of shoulder instability/laxity prior to surgery
Acute versus chronic condition
Length of time immobilized
Strength/pain/swelling/range of motion status
Rehabilitation goals and expectations

Generally speaking, patients placed on this protocol should be progressed **slowly** and conservatively - this protocol is deliberately **slower** than my other RC repair protocols.

Early passive range of motion is highly beneficial to enhance circulation within the joint to promote healing. The protocol is divided into phases. Each phase is adaptable based on the individual and special circumstances. The **overall goals** of the surgical procedure and rehabilitation are to:

Control pain, inflammation, and effusion
Regain normal upper extremity strength and endurance
Regain normal shoulder range of motion
Achieve the level of function based on the orthopedic and patient goals

Initiation of this protocol will generally start around 6 weeks post-op. The supervised rehabilitation program is to be supplemented by a home fitness program where the patient performs the given exercises at home or at a gym facility. **Important post-op signs** to monitor:

Swelling of the shoulder and surrounding soft tissue
Abnormal pain response, hypersensitivity, increasing night pain
Severe range of motion limitations
Weakness in the upper extremity musculature
Improper mechanics or scapular dyskinesia
Core and peri-scapular strength deficits

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Return to activity requires both time and clinical evaluation. To safely and most efficiently return to normal or high level functional activity, the patient requires adequate strength, flexibility, and endurance. Functional evaluation including strength and range of motion testing is one method of evaluating a patient's readiness return to activity. Return to intense activities following a rotator cuff repair require both a strenuous strengthening and range of motion program along with a period of time to allow for tissue healing. Symptoms such as pain, swelling, or instability should be closely monitored by the patient and therapist. Specific exercises may be added, substituted, or modified where clinically appropriate by experienced sports/shoulder therapists or trainers who have expertise in the care of post-operative rotator cuff rehabilitation. While patients may be "cleared" to resume full activities at 6+ months following surgery, additional time spent in full activity or sport participation is often necessary to achieve maximal recovery.

Suggestions during rehab:
1. The RC gets a better blood supply when the shoulder is slightly away from the body; in addition, higher EMG activity is elicited at the posterior cuff when the arm is in a slightly abducted position vs by the side; therefore, we advocate the use of a towel roll under the arm when in a resting position or when performing isometric/isotonic RC TB exercises.
2. The RC muscles are very small; therefore, we use lower intensities to isolate each muscle without recruitment from surrounding larger muscles. Focus on hypertrophy initially by high volume (V= Reps X intensity/weight). Following the hypertrophy phase, strength is the focus with lower reps and higher intensities/weight.
3. Closed chain rotator cuff exercises facilitate cuff strength and shoulder proprioception. Like closed chain exercises for the knee, these can be safely initiated early in the post op course.

PHASE 1: Week 1-4
Focus of this phase is protection, decrease symptoms, initiate passive motion

BRACE/SLING
To be worn for 8 weeks even while sleeping
Can be removed for exercises only

PRECAUTIONS
* Shoulder PROM only, **NO ACTIVE ROM**
* ROM: Gradual ↑ Passive ROM in scapular plane
* Limit abduction to 90 degrees, ER to 30 degrees if subscapularis repair
Avoid excessive adduction and IR

EXERCISES
PASSIVE Dangle / Pendulum exercises – keep circles very small
Initiate passive ER wand exercise week 4 (not to exceed 30° of ER at 45° abduction)

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Passive supine flexion to 90 degrees
Seated and/or supine scapular retractions – perform every hour
Active elbow ROM all planes as tolerated
Grip strengthening using ball or putty
STM to decrease pain and muscle spasm
PROM all planes except extension adhering to limitations

MODALITIES
Moist heat 10-15 min prior to exercise
Ice 5-10 min following exercise and as needed
E-stim/TENS for pain as needed
US as needed

GOALS OF PHASE 1
Promote healing of repaired tissue
Control pain and inflammation
Gradual increase of ROM
Independent in HEP
Delay muscle atrophy

PHASE 2: Week 4-8
BRACE/SLING
Continue to wear at all times except during exercises
D/C brace week 8

ROM
Passive Pendulum exercise
Elbow (flex/ext) range of motion, begin passive elbow ROM if necessary to gain full range
AA Flexion supine – gradually progress
ER with cane: 30° by week 6
Initiate gentle posterior capsule stretching
Initiate gentle IR stretching
Rope/Pulley (flex/scaption) – INITIATE WEEK 6

STRENGTH
Continue grip strengthening as needed
Initiate submaximal pain-free isometrics at week 7
Initiate supine AROM exercises without resistance at week 6 – begin with elbow flexed
Scapular retraction seated and prone with arm off edge of table
Supine protraction
Shrugs

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Initiate UBE without resistance at week 8
*If biceps tenodesis, no light resistive biceps exercises until week 8

MANUAL THERAPY
STM as needed
Continue PROM
Initiate Grade I-II joint mobilization MODALITIES
Moist heat 10-15 min prior to exercise
Ice 10-15 min following exercise and as needed

E-stim/TENS for pain as needed
US as needed

GOALS OF PHASE
Control pain and inflammation
Initiate light RC muscle contraction
Gradual increase in ROM
Initiate light scapular stabilizer contraction

CRITERIA TO PROGRESS
90 degrees shoulder PROM forward elevation
20 degrees of shoulder PROM ER in the scapular plane
0 degrees of shoulder PROM IR in the scapular plane
Palpable muscle contraction felt in scapular and shoulder musculature
No complications with Phase I

PHASE 3: Week 8-16
ROM
Goal is to be at full AAROM week 16+
Continue/progress all ROM work from previous phases
Posterior capsule stretching
Rope/Pulley (flex, abd, scaption)
Towel stretching
Wand activities in all planes

STRENGTH
Continue with strengthening from previous phases increasing resistance and repetition
Initiate gradually pending individual patient progress
Manual rhythmic stabilization exercises at 90° flex - initiate supine and SL and progress to standing
Shoulder shrugs with theraband resistance

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Rows/scapular retraction with theraband/resistance
Supine punches with resistance
IR/ER with theraband
ER isometrics step outs with theraband
Initiate standing Flexion and Scaption progress to dumbbells if good scapulo-humeral rhythm
Sidelying ER
Prone shoulder extension
Prone rowing
Prone ER with abduction
Initiate D1/D2 PNF patterns supine then standing
Push-up progression – start at week 12+ on wall
UBE for endurance training
Bicep/Tricep work MANUAL
Initiate Grade II-IV joint mobs as needed
Continue to gradually progress PROM
Continue STM as needed

MODALITIES
MHP as needed
Ice 10-15 minutes
Ultrasound as needed

GOALS OF PHASE
Minimize pain and swelling
Reach full ROM
Improve upper extremity strength and endurance
Enhance neuromuscular control
Normalize kinematics

CRITERIA TO PROGRESS
Full pain-free PROM / AROM
Minimal to no substitution patterns w shoulder AROM
Perform all exercises with symmetric scapular mechanics
Pain < 2/10

PHASE 4: Weeks 17-24
GOALS OF PHASE
Maintain pain free ROM
Initiate RTC strengthening (with clearance from surgeon)
Initiate motor control exercise
Enhance functional use of UE

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STRENGTH
ER/IR isometrics, side-lying ER
Standing ER vs resistance band, standing IR vs resistance band; IR, ER, sidling ABD -> standing ABD
Periscapular T and Y; W exercise, resistance band Ws, dynamic hug, resistance band dynamic hug
IR and ER in scaption and flex 90-125 rhythmic stabilization
Continue push up progressions
Quadruped alternating isometrics and ball stabilization on wall
PNF D1 diagonal lifts -> D2 diagonal lifts
Field goals

CRITERIA TO PROGRESS
Full pain-free PROM and AROM
ER/IR strength minimum 85% uninvolved arm
ER/IR ratio 60% or more
Negative impingement and instability signs
Performs all exercises demonstrating symmetric scapular mechanics

PHASE 5: Weeks 25-36+
GOALS OF PHASE
Maintain pain-free ROM
Continue strengthening and motor control development
Enhance functional use of upper extremity
Maximize upper extremity strength and endurance
Maximize neuromuscular control
Optimize shoulder mechanics/kinematics
Optimize core stability
Gradual return to strenuous work / sporting activities
Initiate sports specific training/functional training

STRENGTH:
Progress strengthening program with increase in resistance and high speed repetition
UBE high resistance for endurance
IR/ER exercises at 90° abduction
Progress rhythmic stabilization activities to include standing PNF patterns with tubing
Initiate single arm plyotoss (ball toss, ball on wall)
Eccentric RC strengthening
Initiate military press, bench press, flys, lat pulldowns week 16+ (do NOT let elbow extend past plane of thorax)

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Initiate sport specific drills and functional activities
Initiate light upper body plyometric program week 36+

MANUAL
Grade III-IV joint mobs as needed for full ROM
Full PROM

MODALITIES
MHP as needed
Ice 10-15 minutes
Ultrasound as needed

CRITERIA TO PROGRESS
For athletes and people performing strenuous manual tasks, return-to-sport or return-to-activity decision making should be individualized and based upon factors including level of demand on the upper extremity, contact / collision vs non contact sport, frequency and intensity of participation, etc. We encourage close discussion with the patient and surgeon and physical therapist prior to advancing return to sport progressions. An ongoing PT-based maintenance home exercise program is recommended.