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Rehabilitation Protocol:

Small to Moderate Rotator Cuff Repair

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◄ Overview

Surgery to repair a torn rotator cuff most often involves re-attaching the tendon to the humerus. Multiple factors can impact the repair, including tissue quality, the age and size of the tear, compliance with postoperative restrictions, patient age and smoking history. The goals of rehabilitation are first to protect the repair and second to restore pain free function. Understanding the characteristics of the tear as well as the surgical approach are important considerations in establishing a postoperative treatment plan.
Millet et al [1] found that humeral head position has been shown to have an impact on blood flow. Hypovascularity of the supraspinatus has been shown with the arm adducted at the side. The safest resting position after rotator cuff repair is 30° of elevation in the scapular plane, with 0° to 60° of external rotation which can be attained with the abduction sling.

Appropriate communication between the therapist, patient and surgeon is key to a successful outcome.

[1] Millett PJ et al. Rehabilitation of the rotator cuff: an evaluation-based approach. J Am Acad Orthop Surg 2006 Oct; 14(11): 599-609

◄ Phase I Protective Phase 0−6 Weeks

Goals

- Protection of surgical site
- Gradual increase of passive range of motion
- Decrease pain and inflammation
- Maintain full C-spine, elbow, wrist and hand motions
- Re-establish dynamic scapular stability
- Participate in ADLs while protecting repair

Precautions

- Maintain arm in abduction sling/brace until end of week 6 or as advised by surgeon
- Wear sling at night while sleeping
- Remove sling/brace only for exercise or showering
- Avoid excessive stretching
- Avoid sudden motions
- Avoid lying on operated arm
- Avoid overstressing the healing tissues
- Do not use arm beyond hand to mouth
- Do not lift elbow away from body
- Do not lift objects
- Do not reach arm behind back
- Do not support body weight on hands
- Keep elbow at side with all activities including use of computer
- Do not drive until authorized by surgeon

Days 1–7

- Wear sling during the day and at night
- Remove sling for showering/bathing
- Remove sling 4 to 5 times per day for gentle elbow, forearm, wrist and finger exercises
- Ball squeezing exercises
- Neck Exercises
- Ice for pain and inflammation 20 minutes as needed, best to allow 2 hours between applications
- Pendulum exercises if advised by surgeon, depending on the quality of the repair
- Scapular retraction and depression

Weeks 2−4

- Continue above
- Pendulum exercises
- Ice as needed
- Painfree PROM by therapist in supine flexion, scaption, internal and external rotation (in scapular plane)
- PROM Goals:

Flexion:	100 ˚
Scaption:	90 ˚
IR:	45 ˚
ER	45 ˚

Weeks 4−6

- Continue program above

Manual Therapy
- Gentle scapular/glenohumeral joint mobilization as indicated to progress PROM
- Soft Tissue Mobilization as indicated
- Upper trapezius stretching

ROM
- Avoid superior humeral head migration or scapular hiking (shrug sign) with all motion
- Progress PROM with goal of full painfree PROM by end of 6 weeks

Exercise
- Ball rolling on table with elbow below shoulder level
- Initiate AAROM with dowel in supine Flexion to 145˚
- AAROM overhead pulleys flexion/scaption
- Submaximal pain free isometrics with flexed elbow: Flex/Ext/Abd/IR/ER
- General conditioning while protecting shoulder (walking, stationary bike) at week 5

Functional Activities
- Utilize sling for protection in crowds
- Discontinue sling at end of week 6 unless advised by surgeon
- Gradual increase in functional activity while avoiding superior humeral head migration
- Resume driving if advised by surgeon

Criteria for progression to Phase II

Painfree PROM
- Flexion to ≥125°
- Passive ER in scapular plane to ≥ 75° (if uninvolved shoulder PROM >80°)
- Passive IR in scapular plane to ≥ 75° (if uninvolved shoulder PROM >80°)
- Passive abduction ≥ 120°

◄ Phase II – Intermediate Phase
Active Motion and Early Strengthening 7−9 weeks

Goals

- PROM full and pain free by week 10
- Decrease pain and inflammation
- Gradual increase in strength
- Dynamic scapular stabilization
- Optimize neuromuscular control
- Resume light functional activities

Precautions

- No excessive movements behind back
- Avoid sudden, jerking motions
- No lifting greater than 5#
- Keep load close to body
- Avoid heavy housework/yard work – No vacuuming/shoveling

Weeks 7−9

- Continue program above
- Continue ice/modalities as needed

Manual Therapy
- Soft tissue mobilization over healed incision
- Gentle scapular/glenohumeral joint mobilization as indicated to regain full painfree PROM

ROM
- Progress painfree PROM
- Progress AAROM to tolerance
- AAROM behind back

Exercise
- Dynamic shoulder stabilization in supine to facilitate functional movement
- Neuromuscular re-education to address scapular mechanics
- Initiate deloaded /MET pulleys
- Initiate AROM
    - Sidelying flexion and scaption
    - Active ER to 30° – 40°
    - Closed kinetic chain activities
        - Ball on wall
        - Wall pushups

- Initiate strengthening program NO SHRUG!
  - Resisted IR/ER with tubing (axillary roll to avoid fully adducted position)
  - Isotonic strengthening of scapular stabilizers
  - Initiate prone strengthening to neutral, avoid activation of upper trapezius
  - Resisted elbow flexion and extension

Functional Activities

- No lifting greater than 5#
- Keep load close to body
- Resume light functional activities
- Avoid heavy housework/yardwork – No vacuuming/shoveling

Criteria for progression to Phase III

- Full pain free AROM, NO SHRUG!
- Dynamic shoulder stability
- Gradual restoration of shoulder strength, power and endurance
- Optimize neuromuscular control
- Gradual return to functional activities

◄ Phase III Early Strengthening Weeks 10−12

Goals

- Restoration of full and pain free AROM
- Gradual Return to functional activities
- Gradual increase in strength
- Optimize neuromuscular control

Precautions

- No excessive movements behind back
- Avoid sudden, jerking motions
- No overhead lifting
- Resume normal daily activities with caution
- Check with surgeon re: return to sports and lifting restrictions
- Typical return to sports is 6 to 8 months with clearance of surgeon

Manual Therapy
- Continue soft tissue mobilization over healed incision
- More aggressive scapular/glenohumeral joint mobilization as indicated to regain full painfree PROM/AROM

ROM
- Progress AROM to tolerance

Exercise
- Initiate resistive exercise gradually
  - Sidelying ER/IR
  - Standing scaption, flexion and abduction
  - Progress closed kinetic chain exercises
  - Trunk and lower body strengthening (especially in throwing athletes)

Functional Activities
- Resume normal daily activities with caution
- Check with surgeon re: return to sports and lifting restrictions
- Typical return to sports is 6 to 8 months with clearance of surgeon

Criteria to Discontinue PT
- Full painfree AROM with good mechanics unless patient requires further vocational or sport training

AAROM = active-assisted range of motion, ADL = activity of daily living, AROM = active range of motion, PROM = passive range of motion, ER = external rotation, IR = internal rotation, ROM= Range of Motion G/H = glenohumeral

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Rehabilitation Protocol for Small to Moderate Rotator Cuff Tear: Summary Table

Post –op Phase/Goals	Range of Motion	Therapeutic Exercise		Precautions
Protective Phase **0 – 6 Weeks** **Goals :** Protection of surgical site Gradual increase of passive range of motion Decrease pain and inflammation Maintain full C-spine, elbow, wrist and hand motions Re-establish dynamic scapular stability Participate in ADLs while protecting repair	Days 1 - 7		-Wear sling during the day and at night -Remove sling for showering/bathing -Remove sling 4 to 5 times per day for gentle elbow, forearm, wrist and finger exercises -Ball squeezing exercises -Neck Exercises -Ice for pain and inflammation 20 minutes as needed, best to allow 2 hours between applications -Pendulum exercises if advised by surgeon, depending on the quality of the repair -Scapular retraction and depression	-Maintain arm in abduction sling/brace until end of week 6 or as advised by surgeon -Wear sling at night while sleeping -Remove sling/brace only for exercise or showering -Avoid excessive stretching -Avoid sudden motions -Avoid lying on operated arm -Avoid overstressing the healing tissues -Do not use arm beyond hand to mouth -Do not lift elbow away from body -Do not lift objects -Do not reach arm behind back -Do not support body weight on hands -Keep elbow at side with all activities including use of computer
	Weeks 2-4	PROM Goals: Flexion: 100 ˚ Scaption: 90 ˚ IR: 45 ˚ ER 45 ˚	-Continue above -Pendulum exercises -Ice as needed -Painfree PROM by therapist in supine flexion, scaption, internal and external rotation (in scapular plane)	

	Weeks 4 - 6	-Avoid superior humeral head migration or scapular hiking (shrug sign) with all motion -Progress PROM with goal of full painfree PROM by end of 6 weeks	Continue program above Manual: -Gentle scapular, glenohumeral joint mobilization as indicated to progress PROM -Soft Tissue Mobilization as indicated -Upper trapezius stretching -Ball rolling on table with elbow below shoulder level -Initiate AAROM with dowel in supine --- Flexion to 145˚ -AAROM overhead pulleys flexion/scaption -Submaximal pain free isometrics with flexed elbow: Flex/Ext/Abd/IR/ER -General conditioning while protecting shoulder (walking, stationary bike) at week 5 -Discontinue brace or sling at end of week 6 unless advised by surgeon -Utilize sling if needed for protection in crowds -Gradual increase in functional activity while avoiding superior humeral head migration -Resume driving if advised by surgeon	
Criteria for Progression to Phase II	Painfree PROM Flexion to Flexion to ≥125° Passive ER in scapular plane to ≥ 75° (if uninvolved shoulder PROM >80°) Passive IR in scapular plane to ≥ 75° (if uninvolved shoulder PROM >80°) Passive abduction ≥ 120° Progress to active elevation only when patient can elevate cleanly without humeral head migration or scapular hiking.			

Phase II **Intermediate Phase** **Active Motion and Early Strengthening** **Weeks 6 - 10** PROM full and pain free by week 10 Decrease pain and inflammation Gradual increase in strength Dynamic scapular stabilization Optimize neuromuscular control	-Progress painfree PROM -Start AAROM to tolerance -AAROM behind back	-Continue Program above -Soft tissue mobilization over healed incision -Gentle scapular/glenohumeral joint mobilization as indicated to regain full painfree PROM -Dynamic shoulder stabilization in supine to facilitate functional movement -Initiate deloaded /MET pullies -Initiate AAROM -Sidelying flexion and scaption -Active ER to 30° – 40° -Closed kinetic chain activities Ball on wall Wall pushups -Initiate strengthening program NO SHRUG! -Resisted IR/ER with tubing (axillary roll to avoid fully adducted position) -Isotonic strengthening of scapular stabilizers -Initiate prone strengthening to neutral, avoid activation of upper trapezius -Resisted elbow flexion and extension	-No excessive movements behind back -Avoid sudden, jerking motions -No lifting greater than 5# -Keep load close to body -Resume light functional activities -Avoid heavy housework/yardwork -No vacuuming or shoveling
Criteria for Progression to Phase III	Full pain free AROM, NO SHRUG! Dynamic shoulder stability Gradual restoration of shoulder strength, power and endurance Optimize neuromuscular control Gradual return to functional activities		

Phase III **Early Strengthening** **Weeks 10 – 12** **Goals** Restoration of full and pain free AROM Gradual Return to functional activities Gradual increase in strength Optimize neuromuscular control	Progress AROM to tolerance	-Continue soft tissue mobilization over healed incision -More aggressive scapular/glenohumeral joint mobilization as indicated to regain full pain free PROM/AROM -Initiate resistive exercise gradually -Sidelying ER/IR -Standing scaption, flexion and abduction -Progress closed kinetic chain exercises -Trunk and lower body strengthening (especially in throwing athletes)	Precautions: -No excessive movements behind back -Avoid sudden, jerking motions -No overhead lifting -Resume normal daily activities with caution -Check with surgeon re: return to sports and lifting restrictions -Typical return to sports is 6 to 8 months with clearance of surgeon
Criteria to D/C PT	Full painfree AROM with good mechanics unless patient requires further vocational or sport training		

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ROM= Range of Motion G/H = glenohumeral