SHOULDER PECTORALIS REPAIR POST-OPERATIVE GUIDELINES

The following Shoulder Pectoralis Repair Post-Operative Guidelines were developed by HSS Rehabilitation. Progression is both criteria-based and patient specific. Phases and time frames are designed to give the clinician a general sense of progression but do not replace clinical judgement. The rehabilitation program for a pectoralis repair emphasizes early protected ROM with immobilization to avoid overstressing the repaired tissue. Unlike other post-surgical procedures, a pectoralis repair is extracapsular and has less concern for post-operative stiffness. Therefore, extra care should be taken to avoid over-stretching the repair site. The program should balance the aspects of tissue healing and appropriate interventions to maximize flexibility, strength, and pain-free performance of functional activities. If the patient needs to continue to perform upper body weightlifting exercises, a slow but gradual progression should be followed. This model should not replace clinical judgement.

FOLLOW SURGEON MODIFICATIONS AS PRESCRIBED

SHOULDER PECTORALIS REPAIR POST-OPERATIVE GUIDELINES

Phase 1: Weeks 0-4 (Recovery)

PRECAUTIONS

- Sling 4-6 weeks when not performing exercises
- No humeral extension behind mid-line of body
- No active shoulder range of motion (ROM), limit shoulder passive range of motion (PROM) to 90 degrees of flexion, 30 degrees of external rotation (ER), no extension
- No resisted internal rotation
- No resisted horizontal adduction

ASSESSMENT

- Quick Disabilities of Arm, Shoulder and Hand (Quick DASH)
- American Shoulder and Elbow Surgeons Shoulder Score (ASES)
- Numeric Pain Rating Scale (NPRS)
- Wound status
- Sensation
- Shoulder PROM
- Distal upper extremity (UE) ROM (elbow and wrist)

TREATMENT RECOMMENDATIONS

- Patient education
- Gentle shoulder PROM (90 degrees flexion, ER to 0 degrees)
- Distal ROM (elbow, wrist, grip)
- Codman's (pendulums)
- Cryotherapy

CRITERIA FOR ADVANCEMENT

- Pain controlled
- Shoulder PROM 0-90 degrees flexion, 30 degrees ER

EMPHASIZE

- Protection of surgical tissue
- Control inflammation/cryotherapy

SHOULDER PECTORALIS REPAIR POST-OPERATIVE GUIDELINES

Phase 2: Weeks 5-8

PRECAUTIONS

- No humeral extension posterior to midline, restrict abduction
- No active adduction
- Avoid pain with therapeutic exercise & functional activities

ASSESSMENT

- Quick DASH
- ASES
- NPRS
- Incision/scar mobility
- Glenohumeral joint mobility
- Shoulder PROM
- Distal UE AROM

TREATMENT RECOMMENDATIONS

- Patient education
- Supine therapist assisted PROM
- Manual scapula exercises in sidelying
- Patient active assisted range of motion (AAROM)
- Active scapula retraction in seated or standing
- At 6 Weeks:
    - Manually resisted isometric IR and ER
    - Isometric deltoid strengthening: anterior, posterior and middle
    - Stability ball exercise
    - Scapula retraction with elastic bands
    - Hydrotherapy: AAROM forward flexion, gentle internal rotation (IR)/ER, gentle row with floatation devices
    - Upper body ergometry
- At 7-8 Weeks: Sub-max wall isometric shoulder ER

CRITERIA FOR ADVANCEMENT

- Pain controlled
- Wean from use of sling at 6 weeks
- Restore full passive forward flexion
- Restore shoulder ER to 60° by 8 weeks
- Restore scapular stability and scapulohumeral rhythm

EMPHASIZE

- Gradually restore full PROM
- Prioritize scapular control

SHOULDER PECTORALIS REPAIR POST-OPERATIVE GUIDELINES

Phase 3: Weeks 9-12

PRECAUTIONS

- Avoid pain with therapeutic exercises & functional activities
- Humeral extension posterior to midline

ASSESSMENT

- Quick DASH
- ASES
- NPRS
- Joint mobility
- Shoulder PROM and AROM
- Functional mobility

TREATMENT RECOMMENDATIONS

- Patient education
- Shoulder AAROM wand exercises
- Pulleys for shoulder AAROM
- Sub-max wall isometrics → isotonics
- Serratus punches
- Band rows
- Shoulder ER isotonics
- Initiate dumbbell chest press (light weights)
- Wall push-up
- Shoulder horizontal adduction (fly's)

CRITERIA FOR ADVANCEMENT

- Restore full shoulder PROM/AROM
- Improved scapular strength
- Improved rotator cuff strength
- Initiate light resistive muscle strengthening exercises

EMPHASIZE

- Restore full ROM
- Improve scapular strength
- Improve rotator cuff strength

SHOULDER PECTORALIS REPAIR POST-OPERATIVE GUIDELINES

Phase 4: Weeks 13-20

PRECAUTIONS

- Avoid pain with therapeutic exercise and functional activities
- Avoid sport activity until adequate strength development and surgeon clearance

ASSESSMENT

- Quick DASH
- ASES
- NPRS
- Thoracic spine mobility
- Scapulohumeral rhythm
- Shoulder PROM and AROM
- UE and periscapular strength
- Manual muscle testing (MMT) of upper extremity
- Functional mobility

TREATMENT RECOMMENDATIONS

- Patient education
- Gentle pectoral stretches
- Continue scapular strengthening
- Continue pectoralis strengthening (dumbbell press, chest press, fly's, push-ups)
- PNF Diagonal patterns (D1 and D1 flexion and extension)
- Initiate plyometric program
- Kinetic linking

CRITERIA FOR ADVANCEMENT

- Full pain-free ROM
- 5/5 MMT strength throughout UE
- Tolerance to plyometric progression (if appropriate)

EMPHASIZE

- Increase flexibility
- Increase strength

SHOULDER PECTORALIS REPAIR POST-OPERATIVE GUIDELINES

Phase 5: Weeks 21+ (Return to Performance Progression)

PRECAUTIONS

- Avoid high weight, low repetition bench pressing for ~ 6 months
- Avoid sport activity until adequate strength development and surgeon clearance

ASSESSMENT

- Quick DASH, including Sports Module
- ASES
- NPRS
- UE ROM
- UE flexibility
- Strength
    - Isokinetic (if available) and/or isometric strength assessment
    - Push-up test (# reps, force plate assessment)

TREATMENT RECOMMENDATIONS

- Continue to advance UE strengthening and flexibility
- Advance plyometric program

CRITERIA FOR RETURN TO PARTICIPATION

- <10% deficit compared to contralateral limb for isometric/isokinetic strength assessment
- <10% deficits compared to contralateral limb for force plate strength and power measures

EMPHASIZE

- Return to gym program
- Sports specific activities depending on sport
- Monitoring of load progression and volume of exercise

SHOULDER PECTORALIS REPAIR POST-OPERATIVE GUIDELINES

References

1. Balazs GC, Brelin AM, Donohue MA, et al. Incidence rate and results of the surgical treatment of pectoralis major tendon ruptures in active-duty military personnel. *Am J Sports Med*. 2016;44(7):1837-1843. doi:10.1177/0363546516637177

2. Bodendorfer B, McCormick B, Wang D, et al. Treatment of pectoralis major tendon tears: A systematic review and meta-analysis of operative and nonoperative treatment. *Orthop J Sports Med*. 2020;8(7_suppl6). doi:10.1177/2325967120s00411

3. Chan AG, Balazs GC, Haley CA, et al. Pectoralis major rupture in military academy athletes. *Orthop J Sports Med*. 2019;7(7):232596711986015. doi:10.1177/2325967119860157

4. Cordasco FA, Mahony GT, Tsouris N, et al. Pectoralis major tendon tears: Functional outcomes and return to sport in a consecutive series of 40 athletes. *J Shoulder Elbow Surg*. 2017;26(3):458-463. doi:10.1016/j.jse.2016.07.018

5. Fanning E, Daniels K, Cools A, et al. Biomechanical upper-extremity performance tests and isokinetic shoulder strength in collision and contact athletes. *J Sports Sci*. 2021:1-9. doi:10.1080/02640414.2021.1904694

6. Liu JN, Gowd AK, Garcia GH, et al. Analysis of return to sport and weight training after repair of the pectoralis major tendon. *Am J Sports Med*. 2019;47(9):2151-2157. doi:10.1177/0363546519851506

7. Manske RC, Prohaska D. Pectoralis major rupture repair. *Clinical Orthopaedic Rehabilitation: A Team Approach*. 2018. doi:10.1016/b978-0-323-39370-6.00034-2

8. Nute DW, Kusnezov N, Dunn JC, et al. Return to function, complication, and reoperation rates following primary pectoralis major tendon repair in military service members. *J Bone Joint Surg*. 2017;99(1):25-32. doi:10.2106/jbjs.16.00124

9. Sugi M, Acevedo D, Mirzayan R. Surgical treatment of pectoralis major tendon ruptures: A retrospective review of 134 patients tendon ruptures. *Orthop J Sports Med*. 2017;5(7_suppl6). doi:10.1177/2325967117s00242

Created: 12/2021