REHABILITATION PROTOCOL: REPAIR OF THE ROTATOR CUFF

PHASE 1: WEEKS 0-6

I. Restrictions
   A. **No active range of motion exercises**
      1. Active range-of-motion exercise initiated based on size of tear
      a. Small tears (0-1 cm): no active forward elevation before 6 weeks.
      b. Medium tears (1-3 cm): no active range-of-motion exercises before 6 weeks
      c. Large tears (3-5 cm): no active range-of-motion exercises before 8 weeks
      d. Massive tears (> 5 cm): no active range-of-motion exercises before 12 weeks
      e. Tears with significant medial retraction should be treated with restriction similar to large and massive tears
   B. Hold active-assisted ROM exercises for similar time periods based on size of tear
   C. Passive ROM exercises only (Ranges dictated by safe shoulder motion in the operating room)
      1. 140° of forward flexion
      2. 40° of external rotation with the arm at the side
      3. 60° of abduction without rotation
      4. neutral internal rotation
   D. No strengthening/resisted motions of the shoulder until 12 weeks after surgery
      1. For tears with high healing potential (small tears, acute, patients under the age of 50, nonsmoker), isometric strengthening, progressing to theraband exercise, may begin at 8 weeks.
      Strengthening exercises before 12 weeks should be performed with the arm at < 45° of abduction.

II. Immobilization
   A. Type of immobilization depends on amount of abduction required to repair rotator-cuff tendons with little or no tension.
   B. Sling: tension of repair is minimal or non with arm at the side
      1. Small tears: 1-3 weeks
      2. Medium tears: 3-6 weeks
3. Large and massive tears: 6-8 weeks

C. Abduction orthosis: tension of repair is minimal or none with the arm in 20-40° of abduction
   1. Small tears: 6 weeks
   2. Medium tears: 6 weeks
   3. Large and massive tears: 8 weeks

III. Pain control
A. Reduction of pain and discomfort is essential for recovery
   1. Medications
      a. Narcotics: for 7-10 days after surgery
      b. NSAIDs: for patients with persistent discomfort after surgery (elder- consider COX2)
   2. Therapeutic modalities
      a. Ice, ultrasound, HVGS (high-voltage galvanic stimulation)
      b. Moist heat before therapy; ice at the end of the session

IV. Motion: Shoulder
A. Passive only
   1. 140° of forward flexion
   2. 40° of external rotation
   3. 60° of abduction
      a. For patients immobilized in abduction, no additional adduction should be performed at this time.
      b. Exercises begin “above” the level of abduction
   B. Exercises
      1. Begin Codman pendulum exercises to promote early motion
      2. Passive ROM exercises only

V. Motion: Elbow
A. Passive; progress to active motion
   1. 0-130°
   2. Pronation and supination as tolerated

VI. Muscle strengthening
A. Grip strengthening only
B. With partial or small non-displaced tears of the supraspinatus tendon, active internal and external rotation exercise with the arm at the side, and isometric internal and external rotation strengthening can begin during phase 1, when postoperative pain has been controlled.

PHASE 2: WEEKS 6-12

I. Criteria for progression to phase 2
   A. At least 6 weeks of recovery has elapsed
   B. Painless passive ROM exercises to:
      1. 140° of FF
2. 40° of external rotation
3. 60° of abduction
II. Restrictions
   A. No strengthening/resisted motions of the shoulder until 12 weeks after surgery
   B. During Phase 2, no active ROM exercise for patients with massive tears

III. Immobilization
   A. Discontinuation of sling or abduction orthosis
      1. Utilize for comfort only

IV. Motion: Shoulder
   A. Goals
      1. 140° of forward flexion; progress to 160°
      2. 40° of external rotation; progress to 60°
      3. 60° of abduction; progress to 90°
   B. Exercises
      1. Continue with passive ROM exercises to achieve above goals
      2. Begin active assisted ROM exercises for the above goals
      3. Progress to active ROM exercises as tolerated after full motion achieved with active assisted exercises
      4. Light passive stretching at end ranges of motion

V. Muscle strengthening
   A. For small, non-displaced tears advance internal/external rotation rotator cuff strengthening to light theraband, and begin scapular stabilizer strengthening with the arm at the side

PHASE 3: MONTHS 3-6
I. Criteria for progression to phase 3
   A. Painless active range of motion
   B. No shoulder pain or tenderness
   C. Satisfactory clinical examination

II. Goals
   A. Improve shoulder strength, power, and endurance
   B. Improve neuromuscular control and shoulder proprioception
   C. Prepare for gradual return of functional activities
   D. Establish a home-exercise maintenance program that is performed at least 3 times per week for strengthening
   E. Stretching exercises should be performed daily

III. Motion
   A. Achieve motion equal to contralateral side
   B. Utilize passive, active assisted, and active ROM exercises
   C. Passive capsular stretching at end ranges of motion, especially cross-body (horizontal) adduction and internal rotation to stretch the posterior capsule

IV. Muscle strengthening
   A. Strengthening of the rotator cuff
   B. Begin with closed-chain isometric strengthening
      1. Internal rotation
      2. External rotation
      3. Abduction
      4. Forward Flexion
5. Extension
C. Progress to open-chain strengthening with therabands
   1. Exercises performed with the elbow flexed to 90°
   2. Starting position is with the shoulder in the neutral position of 0° of forward flexion abduction, and external rotation. The arm should be comfortable at the patient’s side
   3. Exercises are performed through an arc of 45° in each of the 5 planes of motion
   4. Six color-coded bands available; each provides increasing resistance from 1-6 pounds, at increments of 1 pound
   5. Progression to the next band occurs usually in 2-3 week intervals. Patients are instructed not to progress to the next band if there is any discomfort at the present level
   6. Theraband exercises permit concentric and eccentric strengthening of the shoulder muscles and are a form of isotonic exercises (characterized by variable speed and fixed resistance).
      a. Internal rotation
      b. External rotation
      c. Abduction
      d. Forward Flexion
      e. Extension
   7. Progress to light isotonic dumbbell exercises
      a. Internal rotation
      b. External rotation
      c. Abduction
      d. Forward Flexion
      e. Extension

D. Strengthening of deltoid, especially anterior deltoid

E. Strengthening of scapular stabilizers
   1. Closed-chain strengthening exercises
      a. Scapular retraction (rhomboideus, middle trapezius)
      b. Scapular protraction (serratus anterior)
      c. Scapular depression (latissimus dorsi, trapezius, serratus anterior)
      d. Shoulder shrugs (trapezius, levator scapulae)
   2. Progress to open-chain scapular stabilizer strengthening
   3. Goals
      a. Three times per week
      b. Begin with 10 repetitions, for 3 sets

V. Functional strengthening: Begins after 70% of strength recovered
   A. Plyometric exercises

VI. Progressive, systematic interval program for returning to sports
   A. Throwing athletes
   B. Tennis players
   C. Golfers