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POST-SURGICAL ORIF CLAVICLE FRACTURE (OR NON-UNION) REHABILITATION PROTOCOL

Phase 1: Protection Phase (weeks 0-6)

Goals

- Protect the surgical reconstruction.
- Retard muscular atrophy.
- Decrease pain/inflammation.

Frequency of in-office visits

- 1 to 2 visits over first six weeks to monitor patient compliance and understanding

Shoulder range of motion

- None

Elbow motion

- Passive to active motion, progress as tolerated
  - 0-130°
  - Pronation to supination as tolerated
  - Support elbow with contralateral hand

Shoulder droop with arm hanging unsupported is contraindicated.

Strengthening Exercises (begin at 10-14 days post-op)

- Gentle Isometrics
- Flexion
- Abduction
- Extension
- Internal rotation
- External rotation (scapular plane)

Criteria for progression to phase 2:

- Minimal pain and tenderness
- Satisfactory radiographic follow up with physician
- Good (grade 4/5) MMT of external and internal rotation and abduction

Phase 2: Intermediate Phase (weeks 6-12)

Goals

- Reestablish full nonpainful ROM
- Retard muscular atrophy
- Regain and improve muscular strength
- Normalize arthrokinematics
- Improve neuromuscular control of shoulder complex

Range of motion exercises

- T-bar active-assisted ROM exercises
  - Flexion to tolerance
  - External and internal rotation (begin at 0° abduction, progress to 45° abduction, then to 90° abduction)
- Rope and pulley flexion
- Pendulum exercises
- Self-capsular stretches

Strengthening exercises

- Isometrics
- External and internal rotation, abduction, extension, biceps, triceps
- Progress to isotonic strengthening (light resistance with dumbbells or equivalent)
  - Shoulder abduction
  - Shoulder extension
  - Shoulder external and internal rotation
  - Biceps and triceps
  - Scapular musculature
- Initiate neuromuscular control exercises (PNF)
- Initiate manual resistance
- Initiate upper extremity endurance exercises
- Rhythmic stabilization exercise for shoulder flexion-extension

No shoulder press or bench press or pectoralis deck or pullovers

Decrease pain / inflammation

- Ice, modalities prn

Criteria for Progression to Phase 3

- Full nonpainful ROM
- Satisfactory radiographic follow up with physician
- No pain and tenderness
- Strength 70% of contralateral side

Phase 3: Dynamic strengthening phase (weeks 12-16)

Goals

- Improve strength, power, and endurance
- Improve neuromuscular control and dynamic stability to the AC joint
- Prepare the athlete for overhead motion

Strengthening exercises

- Continue isotonic strengthening exercises
  - Initiate light bench press, shoulder press (progress weight slowly)
  - Continue with resistance exercises for:
    - Shoulder abduction
    - Shoulder external and internal rotation
    - Shoulder flexion
    - Latissimus dorsi (rowing, pull-downs)
    - Biceps and triceps
  - Initiate tubing PNF patterns
  - Initiate external and internal rotation at 90° abduction
  - Scapular strengthening (four directions)
    - Emphasis on scapular retractors, elevators
  - Neuromuscular control exercises for GH and scapulothoracic joints
    - Rhythmic stabilization
      - Shoulder flexion-extension
      - Shoulder external and internal rotation (90/90)
      - Shoulder abduction-adduction
      - PNF D2 patterns
      - Scapular retraction-protraction
      - Scapular elevation-depression
  - Program to plyometric upper extremity exercises
- Continue stretching to maintain mobility

Criteria for progression to Phase 4:

- Full nonpainful ROM
- No pain or tenderness
- Isokinetic test that fulfills criteria (shoulder flexion-extension, abduction-adduction)
- Satisfactory clinical examination

Phase 4: Return to activity phase (weeks 16 – recovery)

Goal

- Progressively increase activities to prepare patient/athlete to full functional return

Exercises

- Initiate interval sports program
- Continue all exercises listed in phase 3
- Progress resistance exercise levels and stretching

This protocol provides you with general guidelines for the patient undergoing open reduction internal fixation of a clavicle fracture or nonunion.

Specific changes in the program will be made by the physician as appropriate for the individual patient.

Questions regarding the progress of any specific patient are encouraged, and should be directed to Dr. Lervick at **952-456-7111**.

REFERENCE:

Clinical Orthopaedic Rehabilitation, 2nd edition. SB Brotzman, KE Wilk. Mosby 2003.