ORTHOSURGERY
Ιατρείο Ορθοπαιδικών Παθήσεων

Δρ. Χρήστος Κ. Γιαννακόπουλος
Ορθοπαιδικός Χειρουργός, Διδάκτωρ Πανεπιστημίου Αθηνών

Πύργος Αθηνών, Κτίριο Γ', 2ος όροφος, Λεωφ. Μεσογείων 2-4, Αθήνα 115 27
Τηλ.: 210 7712792 | Κινητό: 697 20 999 11 | E-mail: cky@orthosurgery.gr

Latissimus dorsi tendon transfer protocol

The intent of this protocol is to provide the physical therapist with a uideline/treatment protocol for the postoperative rehabilitation management for a patient who has undergone a latissimus dorsi tendon transfer (LDTT) for an irreparable rotator cuff tear. It is by no means intended to be a substitute for a physical therapist's clinical decision making regarding the progression of a patient's postoperative rehabilitation based on the individual patient's physical exam/findings, progress, and/or the presence of postoperative complications. If the physical therapist requires assistance in the progression of a postoperative patient who has had a LDTT for an irreparable rotator cuff tear, the therapist should consult with the referring surgeon.

Passive Range of Motion (PROM):

PROM for patients who have undergone a LDTT is defined as ROM that is provided by an **external source** (therapist, instructed family member, or other qualified personnel) with the intent to gain ROM without placing undue stress on either soft tissue structures and/or the surgical repair. Note: **PROM is not stretching**

The **scapular plane** is defined as the shoulder positioned in 30 degrees of abduction and forward flexion with neutral rotation. ROM performed in the scapular plane should enable appropriate shoulder joint alignment.

Phase I – Maximal Protection / Acute Phase (0-6 weeks)

Goals: Minimize pain and inflammation

- • Protect the integrity of the repair
- • Gradually restore appropriate pain free passive range of motion

M (PROM)

Precautions:

- Abduction sling or gunslinger orthosis should be worn all the time except for during exercise and washing.
- No passive shoulder internal rotation, adduction, and extension
- No forced forward flexion PROM
- No upper extremity weight bearing with the operative shoulder

Range of Motion:

- Active range of motion (AROM) elbow, wrist, and hand as indicated
- AROM cervical spine as indicated
- PROM *(typically begins at post-op week 3)*
    - Forward flexion as tolerated
    - Forward elevation in the scapular plane as tolerated
    - External rotation neutral to end range of motion (ROM) as tolerated

Strengthening:

- Scapular retraction
- Shoulder shrugs
- Sub maximal pain free deltoid isometrics

Modalities:

- Frequent cryotherapy as indicated
- Interferential or high volt electrical stimulation for pain control as indicated

Criteria for progression to Phase II:

- Minimal pain with PROM program
- Forward elevation PROM to at least 90º
- external rotation PROM to 30º

<u>Phase II – AROM Phase (begin at post-op week 6)</u>

Goals

- Restore functional AROM
- Facilitate latissimus dorsi to function as an external rotator and depressor of the shoulder
- Restore proprioception
- Encourage use of the operative upper extremity for light activities of daily living
    - Enhance strength to allow for active motions
    - Successful weaning from abduction sling or gunslinger orthosis

Precautions:

- No forced shoulder internal rotation, adduction, or extension stretching
- No forced forward flexion PROM

- No shoulder strengthening exercises
- No lifting or carrying with the operative upper extremity

Range of Motion

- Continue AROM elbow, wrist, and hand as indicated
- Continue AROM cervical spine as indicated
- PROM
    - Forward flexion as tolerated, no forceful stretching
    - Forward elevation in the scapular plane as tolerated
    - External rotation neutral to end ROM as tolerated
    - Internal Rotation as tolerated, no forceful stretching
    - Extension to tolerance, no forceful stretching
    - Horizontal adduction, no forceful stretching
- Active assisted range of motion (AAROM) and AROM (Begin in supine and sidelying then progress to antigravity positions as appropriate)
    - Forward Flexion (lawn chair progression) *
    - Forward elevation *
    - External Rotation *
    - Internal Rotation
    - Prone Rowing AROM Exercises for periscapular musculature
- Joint Mobilizations as indicated

Strengthening:

- Scapular retraction
- Shoulder shrugs
- Rotator Cuff Isometrics Submaximal
    - Internal Rotation
- Wall or table push-up plus

***Use of a biofeedback device is helpful for visual and auditory feedback to re-educate the Latissimus muscle to function as an external rotator and elevator. Neuromuscular electrical stimulation (NMES) is useful to assist in muscular recruitment as well.**

Proprioception & Stability

- Light open chain proprioceptive and rhythmic stabilization exercises as tolerated

Criteria for progression to Phase III:

- Uncomplicated postoperative course
- Minimal pain with exercise
- Forward AROM elevation to, at least, 90º in upright position with minimal to no deltoid hiking
- Good recruitment of latissimus muscle with AROM forward elevation
- Functional AROM with ER and IR

Phase III – Initial Strengthening (not to begin before 12 weeks postoperatively):

Goals:

- Maintain and enhance optimal PROM/AROM
- Re-establish shoulder proprioception
- Regain muscle strength and shoulder stability

Precautions:

- No forced stretching all planes
- No heavy lifting or carrying with the operative upper extremity
- No sports activity
- No strengthening with heavy weights or weight equipment

Range of Motion:

- Continue above as indicated
- Initiate gentle terminal stretching as indicated all planes
- Joint mobilizations as indicated

Strengthening (sport cord / resistance tubing / light free weights):

(Begun in supine and sidelying then progressed to antigravity positions as appropriate)

- Deltoid
- Periscapular musculature
- External Rotation (isometrics progressed to isotonics)
- Internal Rotation
- Biceps, Triceps, general UE conditioning
- Light closed chain activities

Proprioception:

- Position awareness exercises (Sport Rac, if available)
- Rhythmic Stabilization exercises

Criteria for progression to Phase IV:

- Patient able to demonstrate proper proprioceptive awareness
- Adequate muscle performance for ER/IR
- Good recruitment of latissimus with active external rotation, and forward elevation

Phase IV – Advanced Strengthening/Return to activity:

Goals:

- Restoration of shoulder endurance, strength, and power
- Optimize neuromuscular control

Precautions:

- No forced stretching all planes
- No heavy lifting or carrying with the operative upper extremity
- No strengthening with heavy weights or weight equipment

Strengthening:

- Progress Resistive Exercises as tolerated
- Initiate push-up plus progression
- Gentle weight training
    - Hands in sight / no wide grip exercises
    - Avoid cross body activities (avoid combined IR and adduction activities)
    - Minimize overhead activities
- Light sport / recreation activity specific skills

Neuromuscular Control:

- Progress proprioception activities
- Advance closed chain exercises

Criteria for progression to home program / light recreational activities:

- Plateaued with sufficient AROM demonstrating proper scapular humeral rhythm
- Strength > 75-85 % of uninvolved sided
- Satisfactory clinical exam by physician