Flexor Pollicis Longus Repair

This protocol is intended to provide the clinician with a guideline for the postoperative rehabilitation course of a patient who has undergone ***flexor pollicis longus (FPL) repair.*** General time frames are given for reference to the average, but individual patients will progress at different rates depending on their age, comorbidities, pre-surgical range of motion, strength, health/functional status, rehabilitation compliance, learning barriers and complications. Specific time frames, restrictions and precautions are given to protect healing tissues and surgical reconstruction.

The flexor pollicis longus (FPL) is a long muscle located at the deep layer with flexor digitorum profundus and pronator quadratus in the anterior compartment of the forearm. The tendon goes through the carpal tunnel and inserts on the distal phalanx of the thumb. It is the primary flexor to bend the tip of the thumb (flexion of distal interphalangeal joint). Usually, FPL is ruptured or lacerated by an acute traumatic injury. Long-standing rheumatoid arthritis can result in spontaneous tendon rupture caused by attrition of the tendons. However, in this case, a primary repair is not appropriate.

Postoperative Guidelines

Surgical Indication

Primary FPL repair.

Active protocol will be utilized unless specified Passive/ Modified Duran on order.

Return to Work

The timeline for returning to work can vary depending on the type of work performed, various accommodations that may be available within your work environment, and any postoperative complications. Your surgeon will discuss the timeline for returning to work after consideration of these factors.

Flexor Pollicis Longus Repair

Phase I (3-5 days -4 weeks)	Modified Duran	Early Active Motion
Surgeons	•	• Gander, Michelotti, Salyapongse, Zachary, Tofte, Kruse, Mizerik
Rehabilitation goals and priorities	• Remove post op dressings and fabricate orthosis. Traditionally remove dressings at 10-14 days but can be seen earlier. • Wound management • Edema management	• Very important: ELEVATE and IMMOBILIZE for 3-5 days before starting motion to decrease work of flexion. • Remove post op dressings and fabricate orthosis. • Repeatedly explain: "You can move it, but you can't use it" throughout treatment sessions. • Wound management • Edema management: If needed, apply light compression (example: coban) for edematous thumb. Remove prior to any active motion
Suggested therapeutic exercises	• Passive IP flexion and active IP extension to the orthosis with the MP stabilized in neutral position • Passive composite MP/IP flexion and active extension to the orthosis • Tenodesis/Synergistic Wrist Movement: ○ Active wrist flexion with synergistic thumb motion ○ Active wrist extension with synergistic thumb motion	• Passive composite flexion of IP and MP • Active extension to the limit of dorsal blocking orthosis • FIRST week: active flexion at MP and IP to oppose the index and middle fingers • SECOND week: oppose the ring finger • THIRD week: oppose the small finger • FOURTH week: oppose base of small finger • Tenodesis/Synergistic Wrist Movement: ○ Active wrist flexion with synergistic thumb motion ○ Active wrist extension with synergistic thumb motion
Precautions	• No lifting pushing or pulling more than 2 pounds with involved upper extremity • No functional use of the thumb • No weightbearing of involved upper extremity	• No lifting pushing or pulling more than 2 pounds with involved upper extremity • No functional use of the thumb • No weightbearing of involved upper extremity

Orthosis management	• Custom WHFO dorsal blocking orthosis fabrication: ○ wrist in 10 degrees extension and 10 degrees ulnar deviation (to minimize reduce tension of FPL at distal carpal canal) ○ CMC in 30 degrees palmar abduction / 10 degrees flexion ○ MP in slight flexion ○ IP in neutral ○ Wear all the time. Can remove safely at sink to wash the hand ○ Minimize risk for IP contractures by modifying orthoses as needed	• Custom WHFO dorsal blocking orthosis fabrication: ○ wrist in 30 degrees extension ○ Resting position of thumb neutral abduction • Wear all the time except for bathing • Minimize risk for IP contractures by modifying orthoses as needed
Progression criteria	• Initiate active AROM of the thumb at 4 weeks. If edema is significant, scar adherence is present, and/or PROM is limited, initiated protective IPJ AROM flexion.	• If observed active IPJ flexion is progressing well, continue with timeline. If progressing slowly, progress exercises. Use clinical judgement.

Flexor Pollicis Longus Repair

Phase II (4-6 weeks)	Modified Duran	Early Active Motion
Rehabilitation goals and priorities	• Activities of daily living per restrictions • Scar management • Edema management • Full PROM of thumb • 50-75% of full AROM of the thumb	• Activities of daily living per restrictions • Begin using hand for specific light ADL tasks while seated. • Scar management • Edema management • Full PROM of thumb • 50-75% of full AROM of the thumb
Suggested therapeutic exercises	• Pain-free AROM of thumb • IPJ blocking • Wrist AROM	• Progress one step each visit: • Active MP and IP flexion in varying wrist flexion and extension • Blocking for isolated IPJ flexion • Perform light therapeutic activities to increase IPJ flexion
Precautions	• No lifting pushing or pulling more than 2 pounds with involved upper extremity • No weightbearing of involved upper extremity	• No lifting pushing or pulling more than 2 pounds with involved upper extremity • No weightbearing of involved upper extremity
Orthosis management	• Wear all the time except bathing and exercises. • At 6 weeks, cut down orthosis to hand based and initiate	• Wear orthosis all the time except for bathing and exercises. Perform light activities with hand as a therapeutic activity

	light activities with the orthosis not in place	• Cut down to hand based

Flexor Pollicis Longus Repair

Phase III (6-8 weeks)	Modified Duran	Early Active Motion
Rehabilitation goals and priorities	• Activities of daily living per restrictions • Begin using hand for specific light ADL tasks while seated. • Scar management • Edema management • Obtain close to full AROM of IPJ flexion	• Activities of daily living per restrictions • Use hand for specific light ADL tasks while seated. • Scar management • Edema management • Obtain close to full AROM of IPJ flexion
Suggested therapeutic exercises	• Start passive stretching into extension if needed	• Start passive stretching into extension if needed
Precautions	• No resistive or toque activity allowed • No lifting pushing or pulling more than 5 pounds with involved upper extremity • No weightbearing of involved upper extremity	• No resistive or toque activity allowed • No lifting pushing or pulling more than 5 pounds with involved upper extremity • No weightbearing of involved upper extremity
Orthosis management	• Wean from orthosis	• Wean from orthosis
Progression criteria	• Per pain tolerance	• Per pain tolerance

Flexor Pollicis Longus Repair

Phase IV (8 -12 weeks)	Modified Duran	Early Active Motion
Rehabilitation goals and priorities	• Return to all activities: first daily activities and then progress to heavy activities and leisure	• Return to all activities: first daily activities and then progress to heavy activities and leisure
Suggested therapeutic exercises	• Progressive strengthening	• Progressive strengthening
Precautions	• No restrictions at 12 weeks	• No restrictions at 10 weeks
Orthosis management	• Discontinue	• Discontinue
Progression criteria	• Per pain and per MD guidance	• Per pain and per MD guidance

Additional Notes

- **Linburg-Comstock anomaly = intertendinous connection between FPL and FDP of IF at carpal tunnel or distal forearm. Present in 1/3 population.**
- **Test by passively restricting fingers while actively flexing thumb with wrist in extension: positive if pain at wrist.**
- **If surgeon unable to divide the intertendinous connection, DBS should also include IF in 25 degrees of MP flexion and IPs in extension.**

References

1. Barabas, A. & Lloyd, N. Orthotic device and exercise regime for flexor pollicis longus tendon repair in cases with possible Linburg-Comstock anomaly *Hand Therapy* 2013 18: 64-66

2. Cannon, N. M., Beal, B., & Walters, K. (2001). Diagnosis and treatment manual for physicians and therapists. *Indianapolis: The Hand Center of Indiana PC*

3. Giesen, T., Sirotakova, M., Copsey, A.J., Elliot, D. (2009). Flexor Pollicis Longus Primary Repair: Further Experience with the Tang Technique and Controlled Active Mobilization. *J Hand Surg Eur.* Dec;34(6):758-61.

4. Moriya, K., Yoshizu, T., Maki, Y. (2020). Early active mobilization after primary repair of the flexor pollicis longus tendon. *Journal of Orthopaedic Science.* The Japanese Orthopaedic Association.
5. Sirotakova, M. & Elloit, D. (2004) Early Active Mobilization of Primary Repairs of the Flexor Pollicis Longus Tendon with Two Kessler Two-Strand Core Sutures and a Strengthened Circumferential Suture *J Hand Surg [Br]* 2004 29: 531-535

6. Skirven, T. M., Osterman, A. L., Fedorczyk, J., & Amadio, P. C. (2011). *Rehabilitation of the Hand and Upper Extremity, 2-Volume Set E-Book: Expert Consult*. Elsevier Health Sciences.
7. Starr, H. M., Snoddy, M., Hammond, K. E., & Seiler, J. G. (2013). Flexor tendon repair rehabilitation protocols: a systematic review. *The Journal of Hand Surgery*, *38*(9), 1712-1717.

These rehabilitation guidelines were developed collaboratively between UW Health and UnityPoint Health - Meriter Rehabilitation and the UW Health Orthopedic Surgeons.

Content is for informational purposes only and does not replace the guidance, diagnostic or treatment options or educational materials your healthcare provider gives you. Call your health provider immediately if you think you may have a medical emergency. Always seek the advice of your health provider prior to starting any new treatment and contact them immediately with any medical emergency.