Beth Israel Lahey Health
Lahey Hospital & Medical Center

Rehabilitation Protocol

Early Active Motion Flexor Tendon Protocol Zone 2

Department of Orthopedic Surgery

Lahey Hospital & Medical Center, Burlington 781-744-8650

Lahey Outpatient Center, Lexington 781-372-7020

Lahey Medical Center, Peabody 978-538-4267

Department of Rehabilitation Services

Lahey Hospital & Medical Center, Burlington 781-744-8645

Lahey Hospital & Medical Center, S. Bedford St., Burlington 781-744-8648

Lahey Danvers Rehabilitation, Danvers 978-739-7400

Lahey Outpatient Center, Lexington 781-372-7060

◄ Overview

This protocol was developed in conjunction with Lahey Hospital and Medical Center Orthopedic Hand Surgery and Certified Hand therapists.

Zone 2 flexor tendon repairs have evolved greatly over the past 3 decades. Using strong core sutures, typically 4-6 strands, has led to the ability to perform early active range of motion, which has contributed to a dramatic improvement in outcomes.

The rationale for early active motion is to promote increased tendon glide and reduce scar formation. The research has shown that early active motion protocols have had the highest proportion of excellent to good results compared to other more traditional protocols; Modified Duran and Kleinert. (Chesney, 2010)

Some aspects of the Modified Duran (Indiana Hand to Shoulder Center, 2020) and the St. John's protocol (St. John Regional Hospital, 2016) are included in this protocol.

◄ Phase 1

3-5 Days post op to 2 weeks

Goals:

- The involved finger(s) will achieve up to 1/3 of normal flexion by the end of the first week

Orthosis

- *Dorsal Block Orthosis (DBO)* is fabricated and worn **at all times**
    - Wrist in comfortable extension (up to 45 degrees)
    - MCP joints in 30-40 degrees flexion
    - IPs neutral (0 degrees)
- Per physician discretion, a *Manchester Short Orthosis* may be used instead of the DBO This orthosis allows tenodesis, with full wrist flexion while limiting wrist extension to 45 degrees
- This orthosis design has been shown to prevent PIP flexion contractures and increase digital AROM

Manual Treatment

- Manual treatments and edema management as indicated by the therapist
    - elevation, manual lymphatic drainage, use of compression (tubigrip or coban wrap) and/or modalities
- Dressing changes as indicated

Therapeutic Exercise

- **Within the Orthosis,** the following exercises are to be performed 10 repetitions every hour:
    - Individual passive MCP joint flexion of involved finger(s), followed by active extension to orthosis
    - Individual passive PIP joint flexion of involved finger(s), followed by active extension to orthosis
    - Individual passive DIP joint flexion of involved finger(s), followed by active extension to orthosis
    - Composite passive digital flexion of involved finger(s), followed by active extension
    - Composite passive flexion and extension to orthosis of non-involved fingers

- **Within the orthosis**, active finger flexion of 1/3 to 1/2 fist, within a **modified hook position**. The aim is to have flexion of the DIP and PIP joints, while the MCP joints remain against orthosis. This is followed by active finger extension to orthosis
- **Within the orthosis**, use the other hand to passively flex involved digit MCP into more flexion. Then perform active extension of IP joints. This will allow greater excursion of the extensor mechanism in order to prevent PIP contractures

Precautions

- Orthosis should be worn at all times
- Exercises should be performed within a limited/reasonable pain response
- Avoid full or forceful finger flexion
- Therapy should be adjusted according to the extent of injuries, tissue response and specific patient factors

◄ Phase 2

11-14 days post-op

Goals

- Involved finger(s) will have up to ½ active fist by the end of 2 weeks

Orthosis

- At 2 weeks post op, the *Dorsal Block Orthosis (DBO)* is shortened to the *Manchester Short Orthosis*, if the patient did not begin their treatment in this
- The orthosis is worn at all times when out of the clinic, except for hand hygiene as instructed by their therapist

Manual Treatment

- Begin scar management strategies after suture removal
- Continue with edema management
- Continue with other manual techniques and modalities as indicated by therapist

Therapeutic Exercises

- All exercises are performed 10 repetitions every hour
- Continue with the previous exercises from Phase 1
- Initiate synergistic movement (Tenodesis) with the Manchester Orthosis on
    - Actively flex wrist, while extending the fingers-hold for 5 seconds
    - Actively extend wrist, with fingers relaxed- hold for 5 seconds

Precautions

- Orthosis should be worn at all times
- Exercises should be performed within a limited/reasonable pain response
- Avoid full or forceful finger flexion
- Therapy should be adjusted according to the extent of injuries, tissue response and specific patient factors

◄ Phase 3

15-28 days post-op (3-4 weeks)

Goals

- The involved finger(s) will have a ¾ active fist by 3 weeks with a full active fist in 4 weeks

Orthosis

- The *Manchester Short Orthosis* is worn at all times until 4 weeks post-op, except during hand hygiene at home
    - At approximately 4 weeks post op, per therapist discretion, the orthosis may be removed at home for rest periods and/or to perform selected light ADLs
    - In the clinical setting, the orthosis may be removed for light fine motor activities

Manual Treatment

- Scar and edema management
- Other manual techniques and modalities as indicated by the therapist

Therapeutic Exercises

- Continue with the previous exercises:
- Per therapist discretion, other activities or exercises can be initiated to promote differential tendon gliding

Precautions

- Orthosis should be worn at all times
- Avoid forceful finger flexion
- Exercises should be performed within a limited/reasonable pain response
- Therapy should be adjusted according to the extent of injuries, tissue response and specific patient needs

◄ Phase 4

4-5 weeks p-op

Goals

- The involved finger(s) will have a full active fist in 4 weeks

Orthosis

- The orthosis can be removed at home for light activity during ADLs. It should be worn when sleeping, when out of the house and for all resistive ADLs
- Additional orthosis options if indicated:
    - A relative motion extension orthosis (Yoke orthosis) can be used if the FDP tendon is adhered
    - A *Relative Motion Orthosis (RMO)* can be fabricated to help reduce PIP flexion contractures

Manual Treatment

- Scar management, edema control and other techniques determined appropriate by therapist

Therapeutic Exercises

- Continue with the previous exercises
- Progress to full passive extension
- May begin gentle blocking at 5 weeks

Precautions

- Avoid forceful finger flexion
- Exercises should be performed within a limited/reasonable pain response
- Therapy should be adjusted according to the extent of injuries, tissue response and specific patient needs

◄ Phase 5

6-7 weeks p-op

Orthosis

- The *Manchester Orthosis* is discontinued by 6 weeks
- A PIP static progressive, dynamic (LMB) or nighttime extension orthosis can be used for PIP flexion contractures

Manual Treatment

- Scar management, edema control and other techniques determined appropriate by therapist

Therapeutic Exercises

- Continue with the previous exercises, if full movement has not been achieved
- The involved hand can now be used in light ADLs, while avoiding a strong grip
- Gentle strengthening per therapist discretion

Precautions

- Avoid forceful finger flexion
- Exercises should be performed within a limited/reasonable pain response
- Therapy should be adjusted according to the extent of injuries, tissue response and specific patient factors

◄ Phase 6

7-10 weeks p-op

Orthosis

- Continue with night extension and/or relative motion flexion/extension orthoses as needed.

Manual Treatment

- Scar management, edema control and other techniques determined appropriate by therapist.

Therapeutic Exercises

- Grip strengthening may be continued or initiated and other resistive activities determined by the therapist.
- Education regarding return to work within the patient's specific context

Precautions

- Exercises should be performed within a limited/reasonable pain response and without force
- Therapy should be adjusted according to the extent of injuries, tissue response and specific patient factors

References:

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