



Orthopaedic Protocols

Flexor Tendon Repairs Zone I to III Early Passive Mobilization (Modified Duran Program)

3 Days Post-op:

- The bulky compressive dressing is removed. A light compressive dressing is applied to the hand & forearm along with digital level fingersocks or Coban
- A DBS is fitted for continual wear. The DBS positions the wrist & hand as follows:
 - Wrist 20 degree palmar flexion
 - MPs 70 degree flexion
 - PIPs/DIPs full extension
- PROM exercises are initiated within the restraints of the DBS each 2 hours throughout the day. The exercise program is referred to as the “Modified Duran Exercise Program”.
- The Indiana Hand Center version of the Duran Program is a modification of Robert Duran, MD’s initial Early Passive Motion Program established in the mid 1970’s. The PROM exercises including the following:
 - 25 repetitions of passive flexion & extension of the PIP joint
 - 25 repetitions of passive flexion & extension of the DIP joint.
 - 25 repetitions composite flexion & extension of the entire digit
- It is important to place equal emphasis on the passive extension & the passive flexion. It is through the effort of passive extension that allows the tendon to glide distal from the repair site. In addition, it is equally important to ensure a tight composite passive flexion to the distal palmar flexion crease to maximize tendon excursion.
- With limited passive flexion, a dynamic flexion assist may be added to the volar portion of the DBS.

10-14 Days Post-op:

- Within 48 hours following surgery suture removal scar massage with lotion may be initiated, along with Elastomer, Otoform K or Rolyan 50/50
- The PROM exercises are continued within the restraints of the DBS

3 ½ Weeks Post-op:

- The PROM exercises are continued. In complement to the PROM exercises, active & extension exercises may be initiated within the splint

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4 Weeks Post-op:

- NMES may be added to the therapy after the patient has been performing active flexion exercises for 3-5 days.
- Ultrasound may be added to the therapy if a dense scar is present &/or limited tendon excursion is a concern

4 ½ Weeks Post-op:

- The DBS is removed each hour or 2 to begin AROM exercises outside the splint
- The exercises include;
 - Wrist & finger flexion followed by wrist & finger extension
 - Composite fist followed by MP extension with the IP joints flexed, followed by IP extension
 - Composite fist with wrist extension & flexion

5 ½ Weeks Post-op:

- The DBS is discontinued
- The AROM exercises described at 4 ½ weeks are continued patient education is vital. The patient must understand that a tight sustained grip with or without weighted resistance greatly increases the risk of rupture during the early healing of the flexion tendon repairs.
- Extension splinting may be initiated in full active extension, if limited PIP extension is present. Preferably, the splint is worn at night only. During the day, it is recommended to buddy tape the involved digit to an adjacent digit for protection.

6 Weeks Post-op:

- Passive extension exercises are initiated. Blocking exercises may be initiated to the PIP joint & separately to the DIP joint. Note: Blocking is not permitted to the small finger. It has been the experience of these authors that blocking to the PIP joint & in particular, the DIP joint is at relatively high risk for rupture. Therefore, the authors do not perform blocking to the DIP joint of the small finger – no exception.
- Dynamic extension splinting may be initiated if a PIP joint flexion contracture develops.

8 Weeks Post-op:

- Strengthening may be initiated to the hand beginning with putty or a hand exerciser & progressing to hand weights or equipment such as the BTE. Note: No heavy use of the hand is allowed at this time.

10-12 Weeks Post-op:

- Patient may begin to use the involved hand in all activities of daily living.

14-16 Weeks Post-op:

- Heavy, weighted resistance to the hand & extremity is permitted after 14-16 weeks.

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Considerations:

- The greatest achievements in ROM are obtained between 3 ½ & 7 ½ weeks. Therefore, it is important to emphasize to the patient active participation in the therapy program during the critical 4 weeks. Patients will continue to make gains though for up to 6 months by using their hand normally.
- Digital nerve repairs, in conjunction with the flexor tendon repairs, may require positioning the PIP joint initially in 30 degrees of flexion & gradually increasing extension from 3 to 6 weeks. If the surgeon can report that the digital nerve repaired without tension this is ideal for allowing full passive excursion of the tendon.
- For PIP joint flexion contractures to the small finger, it is highly recommended to initiate an extension splint between sessions & at night. There is a greater propensity for a flexion contracture to be difficult to resolve at the small finger, especially when the laceration is located at the PIP joint volar plate.