FLEXOR TENDON REPAIRS
ZONES I to III
EARLY PASSIVE MOBILIZATION (MODIFIED DURAN PROGRAM)

SURGICAL PROCEDURE

A two-strand flexor tendon repair may be performed to initiate an early passive range of motion program such as the Modified Duran Program.

POSTOPERATIVE REHABILITATION

3 Days Postop

The bulky compressive dressing is removed. A light compressive dressing is applied to the hand and forearm along with digital level fingersocks or Coban™.

A dorsal blocking splint (DBS) is fitted for continual wear. The dorsal blocking splint positions the wrist and hand as follows:

- Wrist: 20° palmar flexion
- MPs: 70° flexion
- PIPs/DIPs: full extension

PROM exercises are initiated within the restraints of the dorsal blocking splint each two 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 passive range of motion exercises include the following:

- 25 repetitions of passive flexion and extension of the PIP joint
- 25 repetitions of passive flexion and extension of the DIP joint
- 25 repetitions composite flexion and extension of the entire digit

It is important to place equal emphasis on the passive extension and 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 Postop

Within 48 hours following 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 dorsal blocking splint.

3 ½ Weeks Postop

The PROM exercises are continued. In complement to the passive range of motion exercises, active flexion and extension exercises may be initiated within the splint.

4 Weeks Postop

NMES may be added to the therapy program 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 and/or limited tendon excursion is a concern.

4 ½ Weeks Postop

The dorsal blocking splint is removed each hour or two to begin AROM exercises outside the splint. The exercises include:

- Wrist and finger flexion followed by wrist and finger extension
- Composite fist followed by MP extension with the IP joints flexed, followed by IP extension
- Composite fist with wrist extension and flexion

The dorsal blocking splint is continued between exercise sessions and at night.

EARLY PASSIVE MOBILIZATION - FLEXOR TENDONS ZONES I – III [continued]

5 ½ Weeks Postop
The dorsal blocking splint is discontinued.

The AROM exercises described at 4½ weeks are continuedPatient 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 flexor 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 Postop
Passive extension exercises are initiated. Blocking exercises may be initiated to the PIP joint and 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 and 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 Postop
Strengthening may be initiated to the hand beginning with putty or a hand exerciser and 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 Postop
Patients may begin to use the involved hand in all activities of daily living.

14 – 16 Weeks Postop
Heavy, weighted resistance to the hand and extremity is permitted after 14 – 16 weeks.

CONSIDERATIONS
The greatest achievements in ROM are obtained between 3 ½ and 7½ weeks. Therefore, it is important to emphasize to the patient active participation in the therapy program during the critical four 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° of flexion and gradually increasing extension from 3 to 6 weeks. If the surgeon can report that the digital nerve repair was 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 exercise sessions and 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.

FLEXOR TENDON REPAIR PROTOCOL ZONES 2-5

Flexor Tendon Repair Zones 2-5 Protocol-Brigham and Women's Hospital

Phase I: Weeks 0-3

- Splint: Dorsal blocking splint w/ wrist in neutral, MCP's at 50° flexion, IP's in full extension
- Precautions: No active flexion of involved digits, passive wrist extension, or passive finger extension unless cleared, no functional use of involved hand
- Exercises: Passive DIP extension w/ MCP and PIP in flexion, passive DIP/PIP flexion and active extension, passive wrist flexion and active wrist extension, block MCP in full flexion and active extension of IP's, isolated FDS glide of uninvolved digits, edema control and scar massage

Phase II: Week 3

- Splint: Serial static PIP extension splint at night if needed
- Precautions: Same as above, place/hold exercises under slight tension and avoiding co-contraction
- Exercises: Place/hold for hook, full, and straight fist with wrist extended, place/hold for isolated FDS glide of involved digits

?***Phase III: Week 4***

- Splint: Switch to hand-based dorsal block splint
- Exercises: Begin active, non-resisted digital flexion/extension in hook, full, and straight fist positions with wrist extended

?***Phase IV: Week 5***

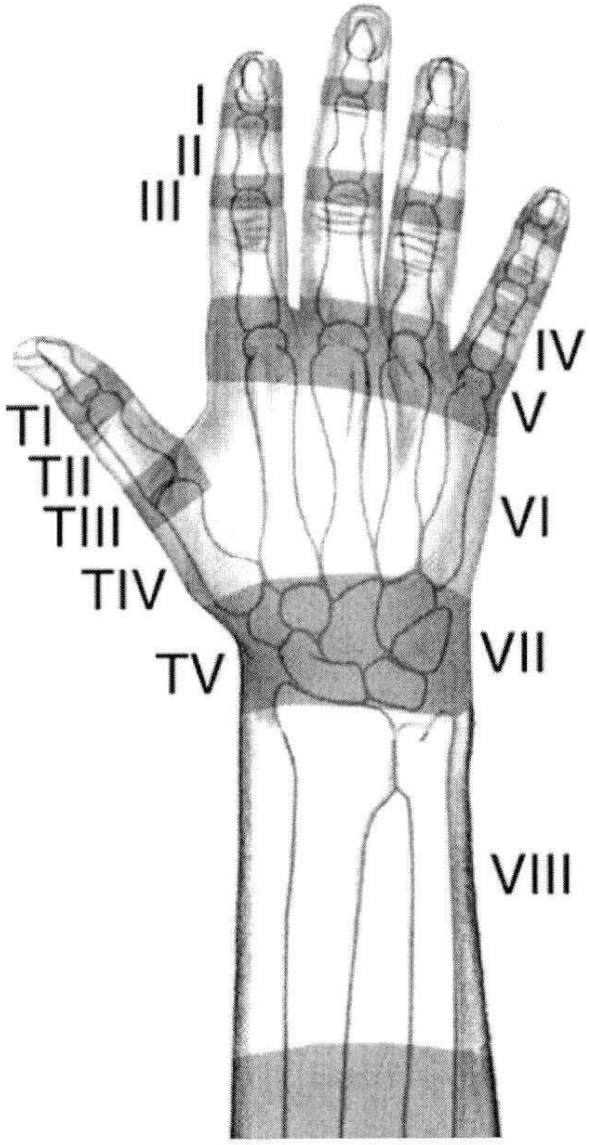
- Splint: Discharge splint
- Exercises: Add gentle blocking exercises for PIP/DIP flexion is appropriate

Phase V: Weeks 6-8

- Splint: Can initiate dynamic PIP extension splint if appropriate
- Exercises: Gradually add resistive exercises

Resources

Zones 2-5 Flexor Tendond Repair Protocol. Brigham and Women's Hospital Web site. http://www.brighamandwomens.org/Patients_Visitors/pcs/rehabilitationservices/Physical%20Therapy%20Standards%20of%20Care%20and%20Protocols/Hand%20-%20Flexor%20Tendon%20Repair%20PT%20Protocol%20Zone%202-5.pdf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