Flexor Tendon Repair Therapy Protocol

DR. EASTWOOD

POSTOPERATIVE PHASE I:
(1 Day to 3-4 Weeks)

GOALS

- Fabrication of custom immobilization splint
- Instruction in PROM and protected AROM
- Increased tendon excursion
- Edema control and scar management
- Independence in HEP

PRECAUTIONS

- Wear splint at all times – remove for hygiene and specific exercises
- No simultaneous wrist and digital extension
- Digital nerve injuries: IP position as per surgeon (slight flexion)

TREATMENT STRATEGIES

- Splint: Static, dorsal, forearm-based
  - DBS
  - Wrist 15°-30°
  - MCPs 60°-70° flexion
  - IP joints strapped into extension against DBs, unless digital nerves were repaired
  - PIP extension splint if needed to achieve full PIP extension
- PROM
  - Passive PIP/DIP flexion in splint followed by active extension to rook of splint
  - Composite passive flexion followed by active extension to rook of splint
  - 10 times each, every 2 hours
- AROM (protected, supervised in therapy)
  - Tenodesis: Place and hold composite and straight fist
  - 10 times each, every 2 hours
- AROM
  - Active digital extension with wrist flexed
  - FDS blocking to uninvolved digits and tendons
  - FDP blocking to uninvolved digits, if FDP is not involved
  - 10 times each, every 2 hours
- Scar management: to prevent tendon adhesions
  - Silicone scar pads
  - Cross-frictional massage
- Edema control
  - Coban™ Lite, pinch method; remove for AROM exercises
  - Retrograde massage
- HEP
  - PROM exercises every 2 hours
  - Tenodesis and AROM added when 100% competent in therapy
  - Scar management as previous, 2x a day
  - Edema management as previous, as needed

If you have any problems or questions, please call your doctor's office (8am-5pm).

Answering service for after hours.

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CRITERIA FOR ADVANCEMENT

- Per surgeon
- Based on stage of wound healing
- Contingent upon tendon excursion measured 3 weeks postoperative and weekly thereafter
    - Determine flexion lag
        - Absent: Prolong Phase I until 6 weeks postoperative
        - Responsive: Progress to Phase II at 4 weeks postoperative
        - Unresponsive: Progress to Phase II at 3 weeks postoperative, continuing to increase load to tendon until lag becomes responsive

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POSTOPERATIVE PHASE II:

(3-6 Weeks)

GOALS

- Increased tendon excursion
- Decreased adhesion formation
- Increased active flexion of the involved digit

PRECAUTIONS

- Continue DBS, unless patient shows unresponsive flexion lag
- Watch for PIP flexion contracture; initiate extension splinting if needed
- No active or passive simultaneous wrist and digital extension

TREATMENT STRATEGIES

- Splint
  - Continue with DBS, if absent flexor lag
  - Modify DBS, if responsive flexor lag
- Wrist extension to neutral and MP extension to 30°-45°
  - Discontinue DBS, if unresponsive flexor lag at 4 weeks postoperative
- PROM
  - Continue as in Phase I
  - Begin joint mobilization for joint stiffness
- AROM
  - Begin place and hold hook fist tenodesis
  - Progress to active tenodesis for composite, straight and hook fists
  - Increase repetition of exercises
- HEP
  - Add active tenodesis for tabletop, composite, straight and hook fists
  - Reduce frequency of sessions at home to 3 times per day

CRITERIA FOR ADVANCEMENT

- Tendon integrity determined by surgeon
- Based on stage of wound healing
- Contingent upon tendon excursion
  - Determine flexion lag
    - Absent: Prolong Phase II until 8 weeks postoperative
    - Responsive: Progress to Phase III at 6 weeks
    - Unresponsive: Progress to Phase III as early as 4 weeks postoperative, continuing to increase load to tendon until lag becomes responsive

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POSTOPERATIVE PHASE III:
(6-8 Weeks)

GOALS

- Full passive motion by 8 weeks
- Increased tendon excursion and controlled adhesion formation
- Independence with ADL

PRECAUTIONS

- No strengthening with good tendon excursion (absent tendon lag)
- No grip and strength testing because this requires maximal effort

TREATMENT STRATEGIES

- Splints
  - Discontinue DBS
  - Continue PIP and/or DIP extension splint
  - Consider flexor stretcher for night
    - Wrist neutral, digits at comfortable end range
    - Wear at night
    - Continue to modify flexor stretcher to position flexor tendons at end of available range
- Passive motion
    - Upgrade PROM as needed
    - In therapy only:
      i. Passive digit extension, with wrist in flexion advancing to neutral
      ii. Joint mobilization or stiff joints
  - Active motion
    - Active tenodesis for composite, straight and hook fists
    - Progression toward active tendon glides
    - Isolated FDS and FDP glide of repaired tendon
    - NMES for muscle reeducation may be necessary
    - Gentle blocking FDS and FDP at 6 weeks, if unresponsive flexion lag
  - Functional activities
    - Resistance exercises with isometric pinch and grip
    - NMES with functional activities
  - HEP
    - Tendon gliding
    - Education for light activity—use of newly splint-free hand

CRITERIA FOR ADVANCEMENT

- Absent flexor lag: Prolong Phase III until 10-12 weeks postoperatively
- Responsive flexor lag: Progress to Phase IV by week 8
- Unresponsive flexor lag: Progress to Phase IV by week 6

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POSTOPERATIVE PHASE IV:
(8-16 Weeks)

GOALS
- Full active motion (absent flexor lag)
- Functional grip strength (75% of noninjured hand)
- Independence with self-care, homemaking, work, school, leisure
- Independent knowledge of precautions

PRECAUTIONS
- Do not measure grip and pinch with excellent tendon excursion
- Extreme uncontrolled force against the tendon may cause tendon rupture up to 12 weeks
- No lifting until 12 weeks with good tendon glide
- No sports or heavy labor until 16 weeks

TREATMENT STRATEGIES
- Splints
  - Continue flexor stretcher as needed
  - Continue PIP extension splinting as needed
  - Blocking splints
    - MP block for hook fisting
    - PIP block for DIP flexion
  - Passive motion
    - Full PROM
  - Joint mobilization active motion
    - Tendon gliding
    - Blocking with resistance
    - NMES
  - Functional activity
    - Full participation in ADL by 12 weeks
    - Grip and pinch strengthening
      i. Progress from isometrics to sponge to putty to hand helper
      ii. Avoid specific strengthening if excellent tendon excursion
  - HEP
    - Blocking exercises
    - Progress to full use of involved hand in all ADL

CRITERIA FOR ADVANCEMENT
- Functional active motion (less than 5° flexor lag)
- Functional strength (involved 75% of noninjured hand)
- Able to return to full duty work, homemaking, sports by 16 weeks postoperatively

JeMe Cioppa-Mosca, J. B.-S. (2006). Postsurgical Rehabilitation Guidelines for the Orthopedic Clinician. St Louis, Missouri: Mosby elsevier. Pages 138-148.

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