SIDELINE ORTHOPEDICS AND SPORTS MEDICINE
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Flexor Tendon Repair Therapy Protocol

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Postoperative Phase I (24 hours 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 degrees
MCPs 60-70 degree 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

Flexor Tendon Repair Therapy Protocol

- 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-light, 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, 2 times a day
Edema management as previous, as needed

CRITERIA FOR ADVEANCEMENT

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

<u>Postoperative Phase II (3-6 weeks)</u>

GOALS

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

PRECAUTIONS

Flexor Tendon Repair Therapy Protocol

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 degrees
- 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
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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

Postoperative Phase III (6-8 weeks)

GOALS

Flexor Tendon Repair Therapy Protocol

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:
    - Passive digit extension, with wrist in flexion advancing to neutral
  - 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

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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

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 food 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

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- Functional activity
  - Full participation in ADL by 12 weeks
  - Grip and pinch strengthening
    - Progress from isometrics to sponge to putty to hand helper
    - 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 degree flexor lag)
- Functional strength (involved 75% of noninjured hand)
- Able to return to full duty work, homemaking, sports by 16 weeks post operatively

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