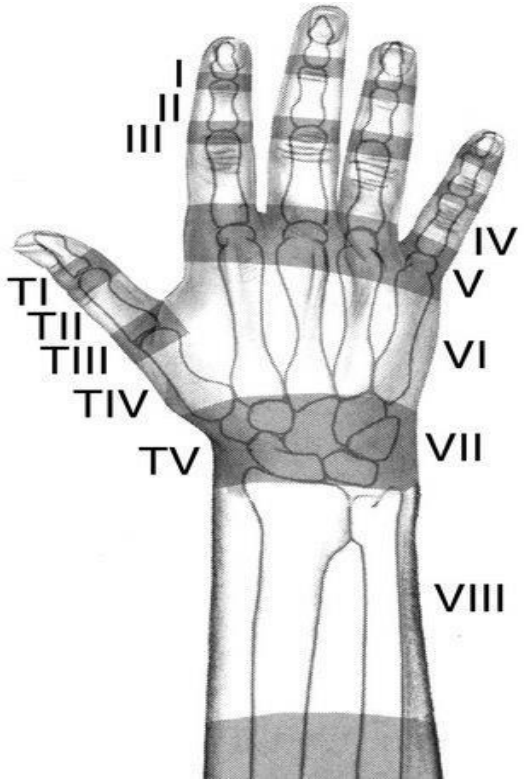
BRIGHAM HEALTH
BRIGHAM AND WOMEN'S HOSPITAL

## Department of Rehabilitation Services

# Primary Upper Extremity and Hand Extensor Tendon Repair Protocol

This protocol is not intended to be a substitute for one's clinical decision making regarding the progression of a patient's post-operative course based on their physical exam/findings, individual progress, and/or the presence of post-operative complications. If a clinician requires assistance in the progression of a patient, they should consult with the referring surgeon. The time frames of phases I-IV are examples and can be adjusted based on the given procedure. Progression to the next phase based on the clinical criteria and/or time frames, as appropriate.




**MALLET FINGER:**

**ZONE I:** Over the distal phalangeal joint (DIP)-Mallet deformity
**ZONE II:** Over the middle phalanx/triangular ligament

Goal: Protect extensor zone I and II with DIP held in extension with PIP joint free.

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Precautions: During orthotic/cast check out, keep DIP joints fully extended 100%.

Frequency: one to two times/week for 6 to 10 weeks if needed for orthosis/cast checks.

| PHASE | ORTHOTIC | THERAPEUTIC EXERCISE: | CONSIDERATIONS: ongoing treatment is variable. |
|---|---|---|---|
| Phase I immediate phase:<br>day 1 to 6 to 8 weeks. | Orthosis or circumferential cast<br><br>Non-op: DIP 10°-0 hyperextension for *tendinous mallet* 6-8 weeks.<br><br>DIP 0° for *bony mallet* 6 weeks. Orthosis worn 100%<br><br>Op: orthosis 100% 6 weeks. | Active PIP flexion of affected finger with adjacent finger(s) held in extension. | Patient to perform daily skin check while keeping DIP extended.<br><br>Consider taping DIP in extension.<br>If swan-neck deformity develops, reduce it passively.<br>Flex PIP joint 30°by dorsal block orthosis.<br><br>Check fit as indicated. |
| Phase II protective phase:<br>week 6 for bony mallet;<br>week 8 for tendinous mallet. | Convert cast to orthosis.<br><br>*Tendinous mallet*: Orthosis worn 100% except for exercise & hygiene.<br><br>*Bony mallet*: orthosis worn during strenuous activity & sleep for 2-4 weeks. | Remove orthotic.<br><br>Gentle active DIP extension & flexion.<br>Start at 10° flexion and progress to 10° increments per week.<br>Replace orthosis.<br><br>Week 8: begin light activity without orthosis if no lag. | If DIP extensor lag ≥10°, resume orthosis 100% x 2-4 weeks.<br><br>Re-assess DIP extension.<br><br>Consider physical demands on the hand i.e., sport or occupation. |
| Phase III intermediate phase:<br>Week 10 | Discharge orthosis during day.<br><br>Continue orthosis at night for 2 weeks. | Fine motor activity.<br><br>Increase flexion gradually while maintaining DIP extension. | Most zone 1 and 2 injuries result with -10-0° extensor lag. |

**BOUTONNIERE FINGER:**

**ZONE III:** Over the proximal phalangeal joint (PIP) Boutonniere deformity

Goal: Protect extensor zone III with PIP held in extension with DIP joint free.

Precautions: During orthotic/cast check out, keep PIP joints fully extended 100%. If lateral bands involved DIP joint placed in 0˚ within orthosis.

Frequency: one to two times/week for 6 to 10 weeks if needed for orthosis/cast checks.

| PHASE | ORTHOTIC | THERAPEUTIC EXERCISE: | CONSIDERATIONS: ongoing treatment is variable. |
|---|---|---|---|
| Phase I immediate phase: day 1 to 6 weeks. | Orthosis or circumferential cast with PIP joint in 0˚.<br><br>Op: orthosis 100% 6 weeks. | Active DIP flexion of affected finger | Patient to perform daily skin check while keeping DIP extended.<br><br>Week 2 if DIP hyperextension present, reduce it passively. |
| Phase II protective phase: week 6 | Convert cast to orthosis with PIP in 0˚ if cast used. | Remove orthotic.<br>Start gentle active PIP extension to 30˚ of flexion.<br>Progress to 10˚ flexion increments per week.<br>Replace orthosis.<br>Week 7: reduce orthosis gradually as 0˚ PIP extension maintained. Begin light activity without orthosis if no lag. | If PIP extensor lag ≥10˚, resume orthosis 100% x 2-4 weeks.<br><br>Re-assess PIP extension.<br><br>Consider physical demands on the hand i.e., sport or occupation. |
| Phase III intermediate phase: week 10 | Discharge orthosis. | | |

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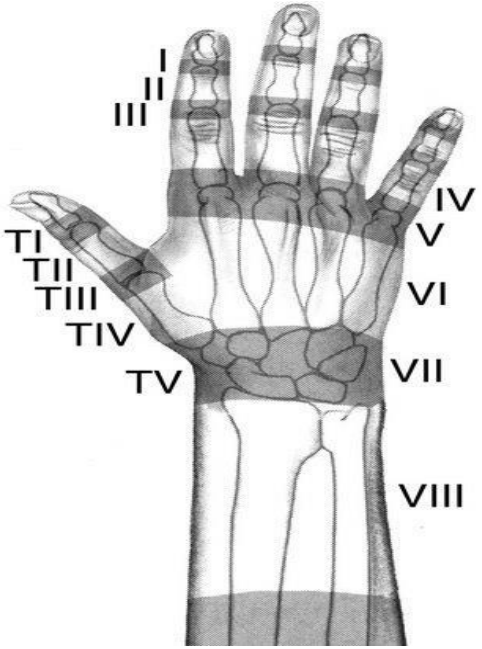
**ACTIVE CONTROLLED SHORT ARC OF MOTION:** when PIP joint can be passively extended fully.

**ZONE III:** Central slip (CS); and/or Lateral Bands (LB); over the proximal interphalangeal joint (PIP)--Boutonnière deformity.
**ZONE IV:** Over the proximal phalanx.




Goal: Protect extensor zone III and IV maintain 0° PIP active extension while gaining incremental 10° of active PIP flexion/week.

Precautions: Limit active PIP flexion during the initial 4 weeks. No forceful flexion or gripping. Avoid MCP and DIP hyperextension.

Frequency: one to two times/week for 6 to 8 weeks.

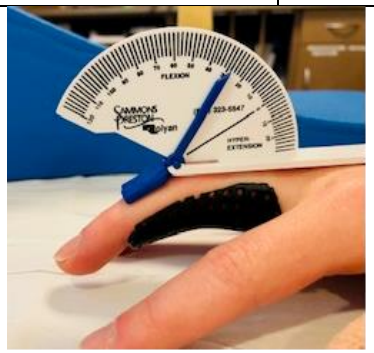
**Active Controlled Motion:** When PIP joint can be passively fully extended.

Short Arc of Motion (SAM) for central slip (CS) and lateral band(s) (LBs).

| PHASE | ORTHOTICS | THERAPEUTIC EXERCISES | CONSIDERATIONS |
|---|---|---|---|
| Phase I immediate phase: day 3 to 4 weeks | 3 Orthotics:<br>Hand based with MCP in 30° flexion volar with PIP & DIP 0° 100% except for exercise.<br>***For CS repair***:<br>*Exercise orthosis 1*: PIP flexed 30° DIP free.<br>*Exercise orthosis 2*: PIP in 0° | ***Repaired CS***: Place MCP in slight flexion.<br>• Active PIP & DIP flexion within confines of *orthosis 1,* then active extension to 0°.<br>• Active DIP flexion within confines of *orthosis 2,* then active extension to 0°.<br>Week 3: if no lag, adjust *orthosis 1* PIP to 40˚flexion.<br>Week 4: by end of week 4, if no lag, continue to progress | |

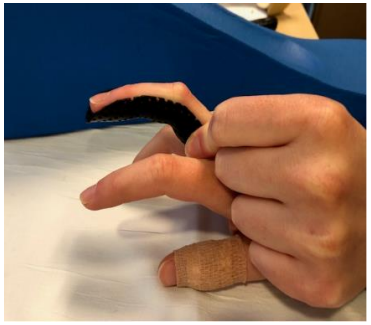
| | | | |
|---|---|---|---|
| | & DIP free<br><br>***<u>For LB(s) repaired</u>***:<br>*Exercise orthosis 1*: PIP flexed 30º and DIP flexed 25º.<br>*Exercise orthosis 2*: PIP in 0º & DIP flexed 25º | flexion of PIP joint adjusting *orthosis 1* by 10º & up to 60˚-70˚.<br>***<u>Repaired LB</u>***: Wrist placed in 30º flexion, MCP in slight flexion<br>• Active PIP & DIP flexion within confines of *orthosis 1* active extension to 0º.<br>• Active DIP flexion within confines of *orthosis 2* active extension to 0º.<br>Week 3: if no lag, adjust *orthosis 1* to PIP 40˚ flexion.<br>Week 4: by end of week 4, if no lag, adjust *orthosis 1* to progress flexion of IP joints by 10˚up to 60˚-70˚. | ***<u>Repaired LB</u>***<br>If PIP lag develops, limit flexion of the IP joints. |
| Phase II protection phase: 4-6 weeks | Discharge hand-based orthosis. Replace with finger based volar with PIP in 0º for CS or PIP & DIP in 0º for CS & LB repair. | Week 4: wear finger-based extension orthosis when not exercising.<br><br>Week 5: gradually wean from orthosis during day for light functional typing, writing, dressing and eating. | If PIP lag, add reverse blocking with active PIP extension.<br>If lag, wear PIP and DIP in 0º orthosis during sleep. |
| Phase III intermediate phase: 6-8 weeks | Discharge all 3 orthotics | Initiate progressive resistive exercises (PREs), and PROM. | |

Resting Hand Based Orthosis

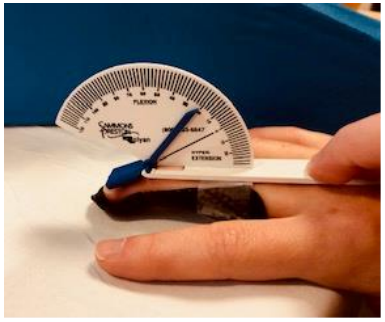


Central Slip (CS) exercise orthosis #1

CS exercise orthosis #2



CS and lateral band (LB) exercise orthosis #1



CS and LB exercise orthosis #2

**Zone V**: Sagittal band (SB) within 3 weeks closed injury unrepaired.

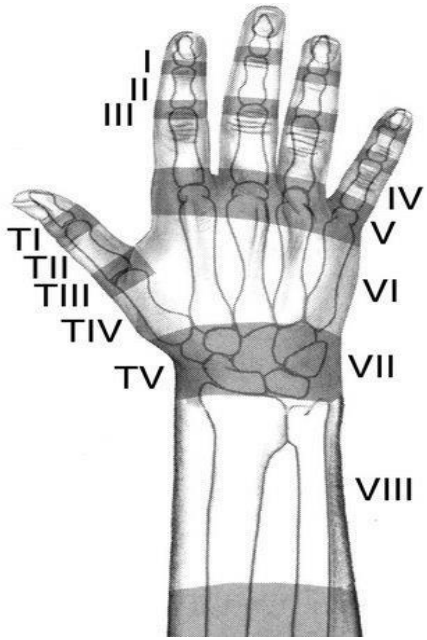
Goal: Re-establish active MCP extension.

Precautions: Avoid MCP flexion to affected finger.

Frequency: One to two times/week for 6 weeks.

| PHASE | ORTHOTIC | THERAPEUTIC EXERCISES | CONSIDERATIONS |
|---|---|---|---|
| I immediate phase: day 3 to 4th week. | Yoke orthosis with affected MCP in 0-25° hyperextension relative to uninvolved MCP joints in slight deviation towards direction of SB injury. | AROM to MCP, PIP and DIP joints in orthosis.<br>PROM to PIP and DIP joints in orthosis. | Monitor for swan-neck deformity. |
| II protection phase: 4-6 weeks | Continue with orthosis | Gentle AROM with Buddy Loop™ to affected digit. | |
| III intermediate phase: 6 weeks | Discharge orthosis. Wear Buddy Loop™ for 1-2 weeks. | Progressive use of hand for ADLs, IADLs with Buddy Loop™. | |

**ZONE IV – VII EXTENSOR TENDON REPAIR IMMEDIATE CONTROLLED ACTIVE MOTION (ICAM)**: Yoke orthosis links the uninjured fingers to the repaired finger. The uninjured fingers in orthosis dynamically assist finger extension that unloads the tendon repair.




**Active Controlled Motion:**
**ZONE IV:** over the proximal phalanx
**ZONE V:** over metacarpal-phalangeal joint (MCP) & sagittal bands (SB)
**ZONE VI:** over metacarpal bone and dorsum of the hand
**ZONE VII:** over wrist

Goal: Protect extensor zones IV - VII with 0º MCP extension while limiting adhesions.

Precautions: ICAM orthosis cannot be used when all of EDC, EIP and EDM tendons repaired. Full fisting may place increased force on repair. No active wrist extension or resistive activity with the hand. No resistance for 6 to 8 weeks. When molding orthotics, no flexion to wrist and fingers.

Frequency: one to two times/week for 6-8 weeks.

| PHASE | ORTHOTIC | THERAPEUTIC EXERCISE | CONSIDERATIONS |
|---|---|---|---|
| Phase I immediate phase: day 3 to end of 3rd week. | Zones 4-6:<br>1. Wrist immobilized in 20º extension.<br>2. Yoke with MCP hyper-extended 15-20º relative to MCP of uninvolved fingers for 6-8 weeks.<br><br>Zone 7:<br>Wrist immobilized 0º & yoke. | Zones 5-6: active MCP flexion with PIPs & DIPs extended then active MCP extension with PIPs & DIPs in hook position within confines of both orthotics.<br>Active composite extension and flexion with orthoses on.<br>Passive PIP extension, active DIP blocking.<br><br>Zone 7: **remove wrist orthosis for exercise only**. Active wrist flexion 20º with fingers relaxed in yoke. Place & hold wrist extended 20º with fingers relaxed in yoke. Repeat. | Fingers must be relaxed to avoid tension to repair.<br><br>Adjust orthotics as edema reduces.<br><br>If lag in zones 4-6, place & hold in extension in both orthotics. |

| | | | |
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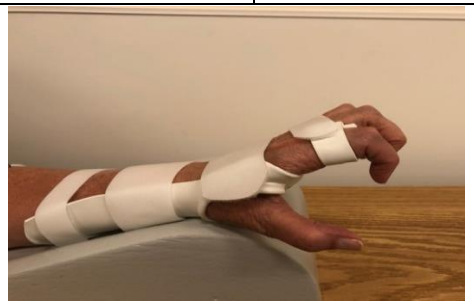
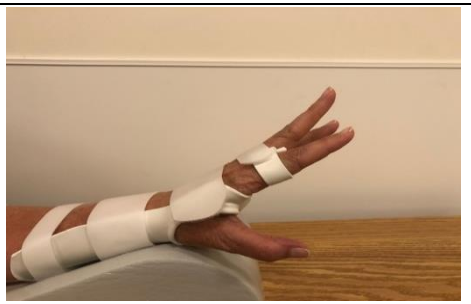
| | By end of 3rd week: zone 4-6: Both orthotics 100%. When wrist active extension/flexion = 25º/25º discontinue wrist orthosis except for moderate-heavy activity.<br><br>By end of 3rd week: zone 7: Same as zone 5-6. | Zones 4-6: If no extensor lag, remove wrist orthosis for active wrist flexion and extension (fingers relaxed in yoke).<br><br>Zone 7: **If no lag, remove wrist orthotic for exercise only.**<br>• Active wrist flexion/extension 40º/40˚ relaxed fingers without yoke.<br>• Place & hold wrist extension 40º with fingers flexed or extended in yoke. | Avoid EDC scar adhesions.<br><br>Zone 7 if lag, **remove wrist orthosis for exercise only**: active wrist flexion 20˚ with fingers relaxed in yoke.<br>Place & hold wrist extended 20˚with fingers relaxed in yoke. |
| Phase II:<br>Week 4-6 | Yoke orthosis 100%.<br><br>Yoke and wrist orthosis worn during moderate heavy activities. | If no extensor lag, progress to composite wrist flexion with fisting & composite wrist and digits extension.<br><br>If no lag, achieve full composite wrist and finger motion before removing yoke orthosis. Start with light ADLs, activities and progress to IADLs. | |
| Phase III:<br>Week 6-7 | D/C wrist and yoke orthoses.<br>Wear Buddy Loop™ during activities.<br>Wean from Buddy Loop™ as tolerated. | | |



**ICAM (Immediate Controlled Active Motion) orthosis fabrication:** wrist and yoke:

1. Measure patient's opposite wrist and hand. Yoke width: length of proximal phalanx of involved finger. Length of yoke is 1.5 x girth of hand across MCP joints.
2. Mold wrist orthosis with wrist extended 20°for zones 5-6. Wrist 0̊ for zone 7.
3. Use pencil to hold affected finger in hyperextension. Have patient support finger with other hand when pencil is removed to mold orthosis.
4. Drape each end of strip over dorsum of uninvolved fingers.
5. Passively place involved finger in 15-20° more extension (hyperextension) than other fingers.
6. Continue to wrap and contour strip around palmar aspect of uninvolved fingers. The ends of the yoke remain on the palmar surface. The gap is allowed for adjustment. Smooth edges and secure with Velcro™.

Configuration of ICAM Finger Yoke/Relative Motion Orthotic When Single Finger (XX) Involved Key:

| Index | Long | Ring | Small |
|---|---|---|---|
| **XX** | O | O | **X** |
| O | **XX** | O | O |
| O | **X** | **XX** | O |
| **X** | O | O | **XX** |

**XX**: *Repaired* finger held in more MCP extension by the yoke.
O: Uninjured finger(s) held in a position in less MCP joint extension by the yoke.
**X:** Additional finger held in more MCP extension to balance yoke.

Zone VIII (distal forearm) and IX (muscle belly) repair
Orthosis: static volar with wrist in 0˚ without yoke.

Protocol is same as Zone V-VII. Begin with AROM at 3 weeks. AAROM at 4 weeks, PROM at 5 weeks, PREs at 6 weeks.

Goal: Avoid inter-tendinous adhesions.

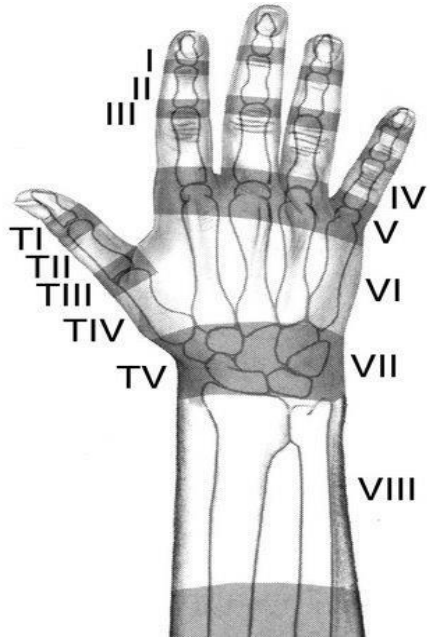
Precautions: No resistance for 6 weeks.

**Primary Extensor Tendon Repair Protocol**

Frequency: One to two times/week for 6-8 weeks.

**CONTROLLED PASSIVE MOTION: SHORT ARC OF MOTION (SAM)** when all extensor tendons are repaired.

**Zone V-VI:** Over the MCP joint (V) and over metacarpal bone (VI)




Goal: Protect extensor zone V and VI when all EDC tendons are repaired. Maintain 0°MCP active extension while gaining incremental 15° MCP flexion to all fingers/week.

Precautions: Limit MCP active flexion during initial 4 weeks. No resistive activity with the hand for 6 to 8 weeks. When molding orthotics, no flexion to wrist and fingers.

Frequency: one to two times/week for 8 weeks.

| PHASE | ORTHOTICS | THERAPEUTIC EXERCISE | CONSIDERATIONS |
|---|---|---|---|
| I: Immediate phase: day 5 to 4 weeks. | 1. Forearm based static wrist extended 30°, MCPs 0°-20°flexion, PIPs in 0° for sleep.<br><br>2. Forearm based dynamic: wrist 0°, index-small MCPs 0° by rubber band tension in slings. Allow 30-35° active MCP flexion to IF, LF; allow 40-45˚active MCP RF, SF flexion with flexion blocked by stop beads for day. | Within dynamic orthosis:<br><br>Active MCP flexion PIPs & DIPs extended via recoil of rubber bands. Active MCP extension with PIPs & DIPs in hook position.<br><br>*In hand clinic:*<br>• Therapist removes orthosis, holds wrist & IP joints in | |

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| | Volar finger gutters may be placed under leather slings for greater EDC glide. | 0°and passively flexes MCPs joints to 45°.<br>• Therapist moves wrist from full passive extension to 0° with all finger joints held in 0°.<br>• Therapist holds wrist & MCP joints in 0° and patient actively flexes PIP joints to 60°.<br><br>Within dynamic orthosis:<br>Week 3: allow 60°active MCP flexion in dynamic orthosis.<br>Week 4: allow 75° active MCP flexion to all fingers in dynamic orthosis. | |
| II: Protection phase: week 4-5 | Adjust forearm based static orthosis with wrist extended 20°. Discharge dynamic orthosis end of 4th week. | Initiate active full fist & composite wrist flexion with fist. | |
| III: Intermediate phase: week 6-8. | Discharge static forearm-based orthosis if no lag. | Week 6: PROM, light fine motor activity.<br>Week 7: PRES. | If MCP 15° lag, wear nighttime forearm-based orthosis 2-4weeks.<br>Consider passively stretching hand intrinsics. |

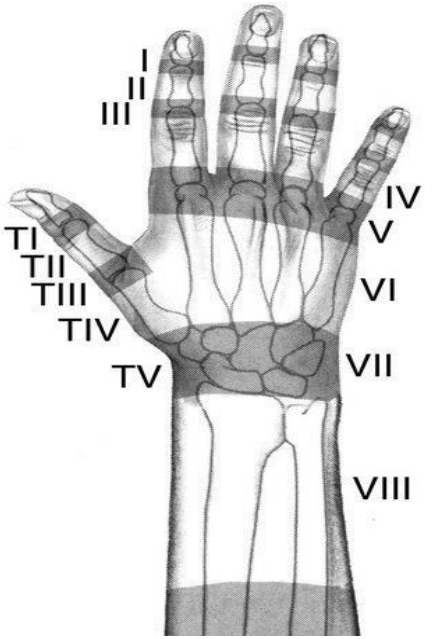
**CONTROLLED PASSIVE MOTION**:

**Zone VII:** Over the dorsal retinaculum of the wrist.
**Zone VIII:** Distal forearm

Goal: Protect extensor zones VI-VIII when all EDC tendons are repaired. Limit adhesions and maintain active MCP and wrist extension while gaining 15° MCP flexion and 20° wrist flexion.

Precautions: Limit combined wrist and full finger flexion during initial 4 weeks. No resistive activity with the hand for 6 to 8 weeks. Avoid scarring proximal to extensor retinaculum to prevent tendon adherence.

Frequency: One to two times/week for 8 weeks.




| PHASE | ORTHOTIC | THERAPEUTIC EXERCISE | CONSIDERATIONS |
|---|---|---|---|
| I: Immediate phase: day 5 to 4 weeks. | 1. **If wrist extensors repaired:** Dynamic forearm based static wrist extended 40°, MCPs, PIPs, DIPs in 0° by rubber band tension but allow 30° active MCP flexion restricted by stop beads. Worn 100%.<br>2. **If wrist extensors intact:** Dynamic forearm based *Double Reverse Kleinert Extension*: | 1. Active hook fist, full fist, & full composite extension within orthosis.<br>2. Therapist removes orthosis for passive wrist extension from 40°to 20°extension.<br><br>Within *Double Reverse Kleinert Extension* orthosis:<br>1. Active Hook fisting. | |

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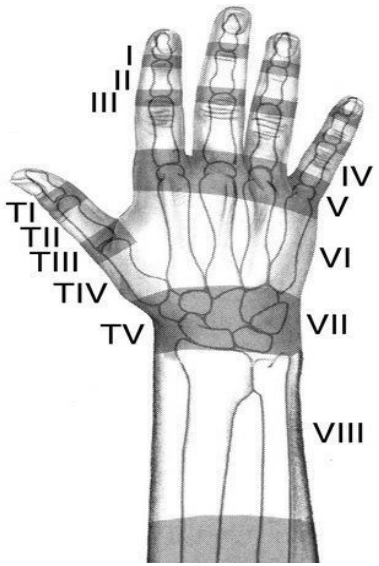
| | allows wrist flexion 0-20° by wrist hinge. Index, long finger, ring, small MCPs 0° by rubber band tension in slings but allow 30° active MCP flexion with flexion blocked by stop beads. Worn 100% | 2. Active wrist flexion 20° with fingers actively extended.<br>3. Active wrist and MCP flexion to limits within orthosis<br>Week 2: if wrist extensors intact, adjust wrist flexion 10° per week & adjust MCP flexion 15° per week.<br><br>Week 2: if wrist extensors repaired, adjust MCP flexion 15° per week. | |
| II: Protection phase: week 4-5 | Fabricate volar forearm based static orthosis with wrist 0°, MCPs 0°, PIPs & DIPs free. | Begin wrist AROM with half fist. | |
| III: Intermediate phase: week 6 | Discharge static forearm-based orthosis if no lag. | Week 6: PROM, light fine motor activity.<br>Week 7: PREs. | If MCP 15° lag, wear nighttime forearm-based orthosis.<br>Consider passively stretching hand intrinsics. |

Active Controlled Motion:

**THUMB TI and II:** over the IP joint (TI) and proximal phalanx: (TII).

Goal: Protect thumb extensor zones TI through TII while limiting adhesions and maintaining active thumb extension.

Precautions: The extensor tendon repair may adhere to the bone, skin and thicken the dorsal joint capsule from scarring in zones TI and TII. No resistance for 8 weeks. For TI, no IP ROM for 6 (bony mallet) to 8 (tendinous mallet) weeks. Avoid gripping or pinching in orthosis. Hyperextend IP joint 10˚ for tendinous mallet. Place IP in 0˚ for bony mallet. When doing orthotic or cast check out, DIP should remain extended at all times.




| PHASE | ORTHOTIC | THERAPEUTIC EXERCISE | CONSIDERATIONS |
|---|---|---|---|
| I: Immediate Phase 1 day through 6-8 weeks. | Zone I: IP joint 0 to 15˚hyperextension<br><u>Operative</u>: <u>Non-op</u>:<br>5-6 weeks 100% 8 weeks 100%<br><br>Zone II: short opponens: MCP & IP 0˚ thumb in radial abduction.<br><u>Operative</u>: <u>Non-op</u>:<br>5-6 weeks 100% 8 weeks 100% | Zone I: None to thumb IP.<br><br>Zone II:<br>Week 3: remove orthotic to start AROM 25-30˚ short arc of motion to DIP & MCP.<br>Week 4: 35-40˚ flexion to DIP & MCP and isolated active extension/flexion. | Patient to perform daily skin check while keeping DIP extended.<br><br>If swan-neck deformity develops, reduce it passively. Flex MCP joint 30°by dorsal block orthosis.<br><br>Check fit every 1-2 weeks. |
| II Protection Phase: 6-8 weeks | Zone I: remove orthosis for exercise, otherwise it is worn 100%. | Zone I: Bony Mallet: gentle active IP flexion to 10˚. Place & Hold thumb in extension. Gradually increase active IP flexion 10˚ per week if DIP is 0˚ actively. | |

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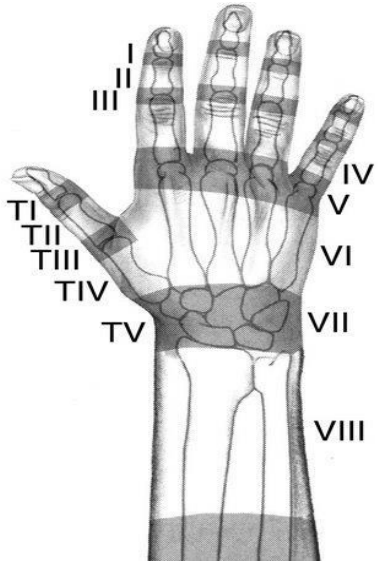
|---|---|---|---|
| | Zone II: discharge orthosis. | Zone I: Non-bony Mallet:<br>Week 8: gentle active IP flexion to 10°. Place & hold thumb in extension. Gradually increase active IP flexion 10° per week if DIP is 0° actively.<br><br>Zone II: Progress AROM slowly. | |
| III Intermediate phase:<br>8-12 weeks | Gradually wean from orthosis during day. Continue orthosis at night for 4 weeks<br><br>Zone II: Discharge orthosis | Fine motor activity and AROM program.<br>Week 8: Start light pinching and grasping. | Consider physical demands on the hand i.e., sport or occupation. Light functional typing, writing, dressing, and eating. |

**EARLY ACTIVE CONTROLLED MOTION:**




**THUMB Zone T III:** over the metacarpophalangeal joint (MCP) Boutonnière deformity
**THUMB Zone T IV:** over metacarpal bone

Goal: Protect TIII and TIV. Maintain MCP in 0˚ active extension while gaining active thumb IP flexion.

Precautions: No resistance until 6-8 weeks. Limit active MCP flexion during the initial 4 weeks. No forceful flexion or pinching.

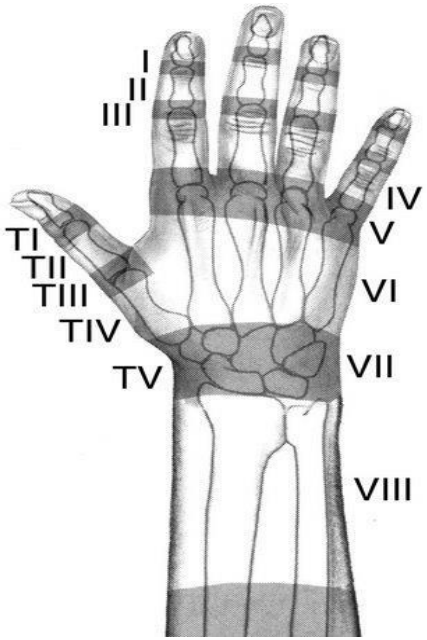
| PHASE | 2 ORTHOTICS | THERAPEUTIC EXERCISES | CONSIDERATIONS |
|---|---|---|---|
| I immediate phase: 5-7 days to 2 weeks. | Short opponens with thumb in mid position and IP included.<br><br>Exercise Short opponens orthosis with thumb in mid position with no IP flexion beyond 30˚-40˚.<br><br>If extensor lag day 5-7, add IP extension at night in separate extension orthosis with short opponens. | 30º-40˚ active IP flexion and active place and hold with IP 0˚ to hyperextension. | Patient may need a template orthosis to limit IP active flexion beyond 30-40˚. |
| II: protection phase: 2 – 5 weeks. | Short opponens orthosis with thumb in mid position | Week 3: if no lag, begin thumb IP active flexion 100% of normal range. Remove orthosis, place and hold thumb in slight radial abduction with thumb MCP & IP in 0˚. Active MCP flexion up to 25˚ with IP in 0˚. | If lag, continue short opponens orthosis wear with IP 0˚ in separate extension orthosis secured to IP. |
| III: intermediate phase 5 – 8 weeks. | Short opponens orthosis with thumb in mid position<br>6 weeks discharge orthosis. | Full active MCP and IP flexion, isolated and combined; fine motor activity.<br>Week 6 to 8: gradual strengthening, PREs. | Gradually wean from orthosis during day for light functional typing, writing, dressing, and eating. |

**CONTROLLED PASSIVE MOTION PROTOCOL THUMB T III AND T IV:**

| PHASE | ORTHOTIC | THERAPEUTIC EXERCISE | CONSIDERATIONS |
|---|---|---|---|
| Phase I immediate phase: 5 to 7 days to 2 weeks | Forearm based static, wrist 30˚ extension with thumb MCP 0˚ (not hyperextended), and slight abduction<br><br>If dynamic forearm based used, wrist 30˚ extension with thumb MCP 0˚ (not hyperextended), and slight abduction | Actively flex IP in 30-40˚ and passive extension to 0˚. | No active extension.<br><br>No gripping or pinching in orthosis. |
| Phase II protective phase: 2-4 weeks | | Increase active flexion as tolerated.<br>Week 3: Place and hold MCP and IP in 0˚with thumb in slight radial abduction.<br>Week 4: AROM in extension. | |
| Phase III intermediate: 5-8 weeks | Week 6: discharge orthosis | Week 5-6: full active combined and isolated flexion.<br>Week 7-8: PREs. | |

**Controlled Passive Motion**: **SHORT ARC OF MOTION (SAM).**

**Thumb Zone T V:** retinaculum of the wrist.




Goal: Protect repaired thumb extensor(s) while maintaining active wrist extension and thumb extension while limiting adhesions.

Precautions: Avoid combined wrist and thumb flexion during initial 4 weeks. No active gripping. Avoid scarring proximal to extensor retinaculum to prevent tendon adherence.

Frequency: one to two times/week for 8-10 weeks.

| PHASE | ORTHOTIC | THERAPEUTIC EXERCISE | CONSIDERATIONS |
|---|---|---|---|
| I: Immediate phase: day 5 to 5 weeks. | 1. **For EPL:** Dynamic dorsal forearm based with wrist 0°, thumb MCP 0° (not hyperextended) with thumb in radial abduction. Thumb IP in 0° by rubber band tension but allows 60° active flexion restricted by stop bead. Worn 100%.<br>2. **For APL/EPB:** Dynamic dorsal forearm-based wrist extension 20° without radial deviation with thumb in mid position between radial & | 1. IP active flexion 60° within orthosis.<br>2. Therapist removes orthosis for passive max wrist extension with IP held in 0°.Thumb MCP joint passively flexed 30°and extended.<br>3. Passively move wrist from full extension to 15° flexion with thumb CMC, MCP, IP in 0°.<br>Week 3: each thumb joint is actively flexed 10° with wrist held in passive extension and | |

| | | | |
|---|---|---|---|
| | palmar abduction. Thumb IP held in 0° by rubber band tension but allows 60° active flexion restricted by stop bead Worn 100%. | adjacent thumb joints held in 0°. Passively flex wrist from full extension to 25°.<br>Week 4: Progress passive exercise by 10° more to wrist and thumb.<br>Week 5: Begin active thumb opposition. | |
| II: Protection phase: week 5-6 | Week 6: Discharge orthosis if no lag. | Continue active thumb opposition. Begin light fine motor activity.<br>Week 6: active thumb opposition to base of small finger. | |
| III: Intermediate phase: week 7 | | Week 7-8: PROM, pinching, gripping with light resistance. | |

**Author:**
Monique Turenne, OT
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**Reviewers:**
Jennifer Botsford, OT
Nancy Kelly, OT
Kamir Pabón Smith, OT
Philip Blazar, MD

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