Zone I: Mallet Finger Injury

This protocol is intended to provide the clinician with a guideline for the conservative and postoperative rehabilitation course of a patient who has sustained a Zone I extensor tendon injury called a mallet finger. General time frames are given for reference to the average, but individual patients will progress at different rates depending on their age, comorbidities, pre-surgical range of motion, strength, health/functional status, rehabilitation compliance, learning barriers and complications. Specific time frames, restrictions and precautions are given to protect healing tissues and surgical reconstruction.

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Two types of Mallet finger injuries

- Bony mallet finger: avulsion of extensor tendon at DIP with a small bony fragment attached
- Tendinous mallet finger with swan neck deformity: Disruption of the extensor tendon at zone 1 leads to DIP flexion, PIP hyperextension due to volar translation of lateral bands secondary to tendon imbalance

Chronic mallet finger (>4 weeks of injury) is the common cause for swan neck. Chronic mallet finger is usually initially treated with splinting; surgery is considered if there is an extensor lag of 40 ° or functional deficits are present

Treatment Objectives: restore active DIP joint extension through an appropriate healing response and lengthening of the extensor

Postoperative Guidelines

Indication

Acute or recent onset (within 4 – 5 weeks) of bony mallet, tendinous mallet, post op (pinned) mallet. Note: Bony mallet which is not reduceable with splint will require surgical intervention.
Left untreated mallet injuries become chronic and may lead to swan neck deformity and DIP osteoarthritis.

Return to Work

The timeline for returning to work can vary depending on the type of work performed, various accommodations that may be available within your work environment, and any postoperative complications. Your surgeon will discuss the timeline for returning to work after consideration of these factors.

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Phase I (initial to 6-8 weeks)	Conservative	Post-surgical (pinning)
Rehabilitation Appointments	• As needed for orthotic management	• As needed for orthotic management
Rehabilitation goals and priorities	• Activities of daily living while maintaining precautions/restrictions • Immobilization of DIPJ • Edema management	• Activities of daily living while maintaining precautions/restrictions • Immobilization of DIPJ with pin in place • Pin care • Edema management
Suggested therapeutic exercises	• AROM/PROM for the PIP and MP joint of involved joint as needed	• AROM/PROM for the PIP and MP joint of involved joint as needed
Precautions	• Instruct in daily skin checks while maintaining full extension • No aggressive gripping and pinching with involved digit	• Instruct in daily skin checks • No aggressive gripping and pinching with involved digit • No lifting, pushing, or pulling more than 5 pounds with upper extremity
Orthotic management	• Full time immobilization of the DIP joint in extension/ slight hyperextension (with no skin blanching) • If swan-neck deformity develops, splint PIP at 30 - 45° flexion via dorsal block for PIP extension.	• Orthotic to protect pin and maintain DIP in available extension. • Adjust orthosis as needed if pin is removed prior to 6 weeks post op

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Phase II (6-8 weeks)	Conservative	Post-Surgical
Rehabilitation Appointments	• 1x/week or as needed	• 1x/week or as needed
Rehabilitation goals and priorities	• Activities of daily living while monitoring for extension lag • Edema management • Weaning from orthosis	• Activities of daily living while monitoring for extension lag • Edema management • Weaning from orthosis
Suggested therapeutic exercises	• AROM of all joints of the involved finger • DIP blocking AROM exercises, as tolerated	• AROM of all joints of the involved finger • DIP blocking AROM exercises, as tolerated
Precautions	• No PROM of DIPJ • No aggressive gripping and pinching with involved digit	• No PROM of DIPJ • No aggressive gripping and pinching with involved digit
Orthotic	• Begin to wean from full daytime orthosis at 6-8 weeks over the next 2 weeks. Instruct patient to remove orthosis 1 hour each day (first day 1 hour, second day 2 hours, third day 3 hours, etc.) over the next 2 weeks. • Continue to wear orthosis at night for 2 weeks	• Begin to wean from full daytime orthosis at 6-8 weeks over the next 2 weeks. Instruct patient to remove orthosis 1 hour each day (first day 1 hour, second day 2 hours, third day 3 hours, etc.) over the next 2 weeks. • Continue to wear orthosis at night for 2 weeks
Progression criteria	• If extensor lag (>15 degrees) is present, continue with full-time orthosis wear and discontinue HEP until for an additional two weeks.	• If extensor lag (>15 degrees) is present, continue with full-time orthosis wear and discontinue HEP until for an additional two weeks

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Phase II (10-12 weeks)	Conservative	Post-Surgical
Rehabilitation Appointments	• As needed	• As needed
Rehabilitation goals and priorities	• Return to all activities	• Return to all activities
Suggested therapeutic exercises	• Strengthening as needed	• Strengthening as needed
Precautions	• No PROM of DIPJ	• No PROM of DIPJ
Orthotic	• Discontinue	• Discontinue
Progression criteria	• Expected extension lag of 10-15 degrees is appropriate and good outcome. If extensor lag at any time is greater than 20 degrees, consider full time orthosis wearing for an additional 2 weeks.	• Expected extension lag of 10-15 degrees is appropriate and good outcome. If extensor lag at any time is greater than 20 degrees, consider full time orthosis wearing for an additional 2 weeks.

Additional Notes

- If patient presents with a tendinous mallet with hyperextension of the PIP joint, you may consider including the PIP joint in 30 degrees of flexion for the first 2 – 3 weeks for patient comfort.
- Consider taping the DIP joint in extension within the orthosis for non-operative cases. Steri-strip, bandage tape or Kinesiology tape to assist with maintenance of digit extension when performing hygiene/ changing orthosis or liner, etc.
- Orthotic time frames are from the initiation date of full-time orthotic use, NOT from date of onset.

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These rehabilitation guidelines were developed collaboratively between UW Health and UnityPoint Health - Meriter Rehabilitation and the UW Health Orthopedic Surgeons.

Content is for informational purposes only and does not replace the guidance, diagnostic or treatment options or educational materials your healthcare provider gives you. Call your health provider immediately if you think you may have a medical emergency. Always seek the advice of your health provider prior to starting any new treatment and contact them immediately with any medical emergency.