Plastic Surgery & Skin Specialists by BayCare Clinic

Dr. Schmidt
Mallet Injury Conservative Management

A mallet injury is a disruption of the terminal extensor tendon due to laceration, rupture or avulsion fracture. This injury causes a characteristic DIP joint extension lag. Conservative management of this injury is typically successful with continual splinting or casting of the DIP joint in extension for 6-8 weeks followed by a gradual range of motion program.

Phase 1- Maximum Protection 0-6 weeks

Goals for phase 1

- Fabricate well-fitting DIP extension splint or cast
- Educate patient in importance of maintaining DIP joint in full extension at all times
- Maintain skin integrity
- Maintain ROM in MP and PIP joints of involved digit

Other Considerations

- It is critical that the DIP joint remain in extension at all times. If the DIP joint is allowed to flex during phase 1, splint wearing time must start over.
- QuickCast or Orficast, latex-free casting tapes, are an effective circumferential option. The cast can be wrapped in Coban during wet or dirty tasks and to prevent the cast from sliding distally. The patient returns to the clinic every 1-2 weeks for re-casting and to check skin integrity.
- Acute injuries with treatment beginning within 3 weeks of injury are splinted for 6 weeks.
- Chronic injuries beginning treatment after 3 weeks of injury need to be splinted for 8 weeks continually.

Splint / Cast

- Fabricate splint or cast positioning DIP joint in full to slight hyper-extension
- If the patient demonstrates hyperextension at the PIP joint, it may be necessary to also splint or cast the PIP joint in 30 degrees of flexion for the first 3 weeks (3)
- If the patient does not have full DIP joint extension, it may be necessary to restore this motion prior to initiating splinting program

Patient Education

- Patient is educated in importance of returning to the clinic for re-casting and splint adjustments as needed
- Patient is educated in daily removal of the splint for skin care while maintaining DIP joint in full extension. Great care must be taken to ensure the DIP does not flex during this process.

ROM

- A/PROM to MP and PIP joints of involved digit to restore and maintain motion
- Composite A/PROM to MP and IP joints of adjacent digits may be necessary to reduce stiffness

Manual Therapy

Manual edema mobilization (MEM) to dorsal DIP joint may be helpful to reduce swelling and pain

Modalities

Kinesiotape has been shown to be helpful in maintaining DIP joint extension. The tape is applied from volar aspect of distal phalanx and with slight tension, wrapped distally over tip of digit and dorsal aspect of distal and middle phalanx. (2)

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Phase 2 – Restore ROM and Return to Function 6+ weeks

Goals for phase 2

- Initiate AROM
- Slowly wean from mallet splint
- Prevent and minimize DIP joint extensor lag
- Initiate strengthening as needed and return to functional activity

Other Considerations

- It is important to measure DIP joint extension each visit. If the patient has an extensor lag, adjust splinting and ROM schedule accordingly.
- PROM and blocked IP joint flexion exercises are avoided to prevent extensor lag.
- An easy way for the patient to monitor DIP joint lag during the splint weaning phase is to draw an outline of the patient's digit on the back of a business card. The patient can then place digit on card to "measure" DIP joint extension. If the DIP joint is more flexed compared to the outline, they are instructed to increase wearing time of the splint during the day. See weaning schedule below.

Splint

- 6 weeks: Mallet splint is worn between exercise sessions and at night
- 7 weeks: Mallet splint is worn at night but slowly discontinued during the day over a period of a week (see weaning schedule below)
- 8 weeks: Mallet splint is worn only at night and discontinued completely during the day if there is no extensor lag
- 9 weeks: Mallet splint is discontinued entirely as long as DIP extension remains at 0-5 degrees

AROM

- 6 weeks: Splint is removed 4x/day for 5 minute exercise sessions including gentle fist and reverse blocked IP extension, increasing to more frequent sessions as long as extensor lag does not develop.
  - No PROM or blocked IP flexion exercises
- 7+ weeks: Monitor closely for extensor lag and if greater than 5 degrees, increase splinting time and decrease frequency of exercises

Strengthening

- 8-10 weeks: Gentle pain-free grip and pinch strengthening with putty may be initiated if there is no extensor lag present

References

1. Cannon, N. M., & Schnitz, G. (2001). *Diagnosis and treatment manual for physicians and therapists*. Indianapolis, IN: Hand Rehabilitation Center of Indiana.

2. Devan, D. (2014). A novel way of treating mallet finger injuries. *Journal of Hand Therapy,27*(4), 325-329. doi:10.1016/j.jht.2014.02.005 (combination of Kinesiotape and orthosis)

3. Saito, K., & Kihara, H. (2016). A randomized controlled trial of the effect of 2-step orthosis treatment for a mallet finger of tendinous origin. *Journal of Hand Therapy,29*(4), 433-439. doi:10.1016/j.jht.2016.07.005

4. Valdes, K., Naughton, N., & Algar, L. (2015). Conservative treatment of mallet finger: A systematic review. *Journal of Hand Therapy,28*(3), 237-246. doi:10.1016/j.jht.2015.03.001

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Mallet Orthotic Weaning Schedule

Week One	Morning	Afternoon	Evening	Night
Day 1	Off	On	Off	On
Day 2	Off	On	Off	On
Day 3	Off	On	Off	On
Day 4	Off	On	Off	On
Day 5	Off	On	Off	On
Day 6	Off	On	Off	On
Day 7	Off	On	Off	On

Week Two

Day 1	Off	Measure	Off	On
Day 2	Off	Measure	Off	On
Day 3	Off	Measure	Off	On
Day 4	Off	Measure	Off	On
Day 5	Off	Measure	Off	On
Day 6	Off	Measure	Off	On
Day 7	Off	Measure	Off	On

This protocol was reviewed and updated by Misty Carriveau, OTR, CHT, Nissa McWilliams, OTR/L, CHT, Steven C. Schmidt, MD May 2017.