Journal of Hand Therapy 29 (2016) 352–355

Contents lists available at ScienceDirect

Journal of Hand Therapy

journal homepage: www.jhandtherapy.org

JHT Read for Credit Article #435.

Practice Forum

Mallet finger injuries—A new method to maintain distal interphalangeal joint extension

Lonita Mak OT Reg (ON), CHT[a], Lorna D. Aitkens OT Reg (ON), CHT[a], Christine B. Novak PT, PhD[a,b,*]

[a] Toronto Western Hospital Hand Program, University Health Network, Toronto, Ontario, Canada
[b] Division of Plastic & Reconstructive Surgery, University of Toronto, Toronto, Ontario, Canada

Ensuring that distal interphalangeal joint extension is maintained is an important but challenging part of the treatment process. These authors describe a simple approach to ensuring distal interphalangeal joint extension for these patients. — Victoria Prigane, PhD, OTR, CHT, CLT, Practice Forum Editor

Introduction

Mallet finger injuries are common, and uncomplicated cases are typically treated with nonoperative management that includes immobilization of the distal interphalangeal joint (DIPJ) in extension for 6-8 weeks.[1] Many orthosis designs have been described, and most studies report comparable results with different orthoses, acknowledging that patient compliance is an important factor for successful nonoperative treatment.[2-7] Despite the variation in orthosis designs, many patients struggle to maintain DIPJ extension when applying or removing the orthosis. Elastic tape has been described as an adjunct to support the DIPJ in extension when donning or doffing the orthosis, with a decreased overall treatment time.[8]

We describe our nonoperative treatment for mallet finger injuries using modification for additional support to maintain DIPJ extension using a combination of a steri-strip and sugar-tong style finger orthoses.

Material

- 1/2 × 4 inch (12 × 10 mm) steri-strip,
- 1/12 inch (2 mm) microperforated uncoated thermoplastic material, and
- transparent tape.

Procedure

Step 1: Application of the steri-strip

- Clean the involved finger and pat dry
- Apply a steri-strip to the volar aspect just distal to the proximal interphalangeal joint (PIPJ) crease (Fig. 1)
- Continue the application in a longitudinal manner to the dorsal PIPJ to hold the DIPJ in extension (Fig. 2)

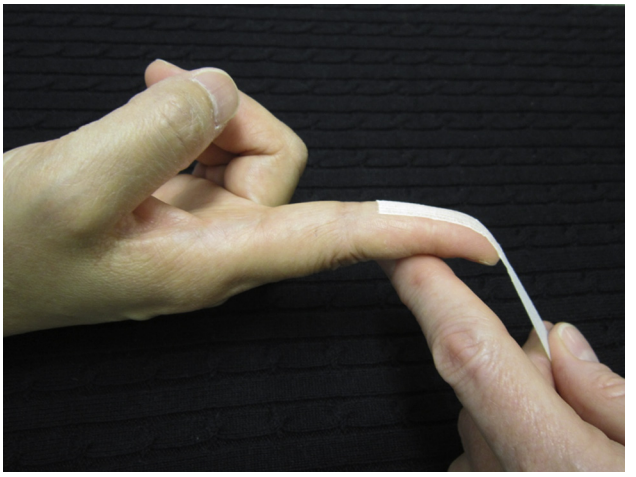

Fig. 1. With the forearm in pronation and holding the DIPJ in full extension, a steri-strip is applied to the volar surface of the middle and distal phalanx.

This work was presented as a poster at the Canadian Society of Hand Therapists annual meeting, Montreal Quebec, May 22-23, 2015 and American Society of Hand Therapists annual meeting, Denver, Colorado, October 8-11, 2015.

* Corresponding author. Toronto Western Hospital Hand Program, 399 Bathurst Street, 2EW-422, Toronto, Ontario M5T 2S8, Canada. Tel.: +1416 603 5800x3729; fax: +416 603 5392.

E-mail address: Christine.novak@uhn.ca (C.B. Novak).

0894-1130/$ – see front matter
http://dx.doi.org/10.1016/j.jht.2016.01.002

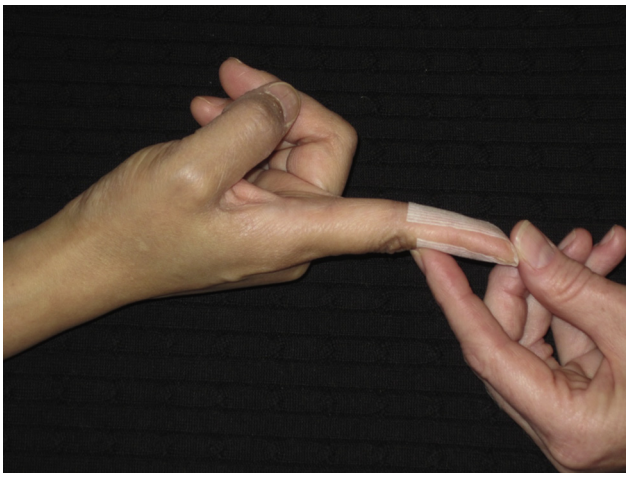

Fig. 2. The steri-strip application is continued to the dorsal surface.

Step 2: Orthosis fabrication

- Trace finger on paper towel—start at the PIPJ and trace distally around tip back to PIPJ (Fig. 3A).
- Add 1/12-1/8 inch (2-3 mm) space around the tracing to allow the volar component to cover almost half of the finger (Fig. 3B).
- Cut out tracing, avoiding distal tip area.
- Fold pattern tracing onto other side of paper, trace, and cut out (Fig. 3C).
- Trace pattern onto thermoplastic material (Fig. 4).
- Heat and cut out.
- With the involved DIPJ supported in extension by the steri-strip (Fig. 2), apply lotion to the steri-strip *to avoid* sticking to thermoplastic material.
- Drape the thermoplastic material over distal tip and form to finger.
- Trim sides to allow orthosis to act as a clamp.
- Apply 2 transverse tapes to secure the orthosis to the finger (Fig. 5).
- With the orthosis in place, ensure that PIPJ flexion is unrestricted (Fig. 6).

Discussion

The sugar-tong style orthosis maintains the DIPJ in extension, minimizes distal migration, and also provides compression and protection to the swollen and painful dorsal prominence. The steri-strip ensures that the DIPJ is maintained in extension during the application and removal of the orthosis. Steri-strips are easy to use, inexpensive, gentle to skin, and available in most hand therapy settings. It can be potentially used with other orthosis designs. However, careful consideration is required in cases of compromised underlying skin and/or circulatory conditions.

References

1. Pratt AL. Is eight weeks' immobilisation of the distal interphalangeal joint adequate treatment for acute closed mallet finger injuries of the hand? A critical review of the literature. *Br J Hand Ther.* 2004;9(1):4–10.
2. Handoll HHG, Vaghela MV. Interventions for treating mallet finger injuries. *Cochrane Database Syst Rev.* 2008;(3):CD004574.
3. Moradi A, Kachooei AR, Mudgal CS. Mallet fracture. *J Hand Surg Am.* 2014;39:2067–2069.
4. O'Brien LJ, Bailey MJ. Single blind, prospective, randomized controlled trial comparing dorsal aluminum and custom thermoplastic splints to stack splint for acute mallet finger. *Arch Phys Med Rehabil.* 2011;92:191–198.
5. Pike J, Mulpuri K, Metzger M, Ng G, Wells N, Goetz T. Blinded, prospective, randomized clinical trial comparing volar, dorsal, and custom thermoplastic splinting in treatment of acute mallet finger. *J Hand Surg Am.* 2010;35:580–588.
6. Smit JM, Beets MR, Zeebregts CJ, Rood A, Welters CFM. Treatment options for mallet finger: a review. *Plast Reconstr Surg.* 2010;126:1624–1629.
7. Valdes K, Naughton N, Algar L. Conservative treatment of mallet finger: a systematic review. *J Hand Ther.* 2015;28:237–245.
8. Devan D. A novel way of treating mallet finger injuries. *J Hand Ther.* 2014;27:325–329.

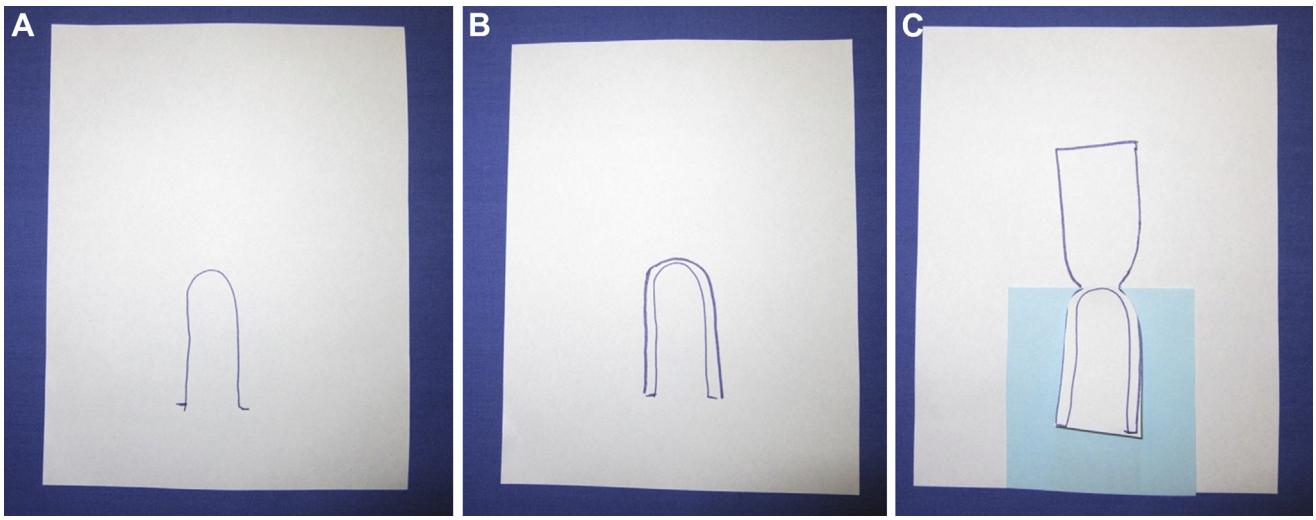

Fig. 3. The template is traced from the involved digit.