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Practice Forum

## The challenge of the mallet orthosis: A simple solution



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*This author provides instruction regarding an alternative, simple, and custom-made orthotic device to manage the mallet finger that may stay in place more securely while also allowing for proximal interphalangeal joint flexion during the healing of the terminal tendon. — KRISTIN VALDES, OTD, OT, CHT, Practice Forum Editor, Journal of Hand Therapy.*

### Introduction

Custom-made orthoses for mallet injuries have been reported as having fewer complications with skin condition than prefabricated orthoses.<sup>1</sup> Kinesiology tape has also been suggested as an adjunct to traditional orthotics in treating mallet injuries as it can limit flexion of the distal phalanx.<sup>2</sup> Immobilization of the distal interphalangeal joint should be for 6–8 weeks, with additional weeks of immobilization if there is persistent extension lag.<sup>3</sup>

Howell and Peck<sup>4</sup> recommend that the distal interphalangeal joint should be immobilized in extension or slight hyperextension along with the proximal interphalangeal joint (PIP) in approximately 20° flexion. This may seem counterintuitive to therapists who wish to maintain flexibility to the PIP while the terminal tendon heals. However, its purpose is 4-fold; it prevents distal migration of the orthosis, it will stay on more securely, it reduces tension on the terminal tendon by relaxing the lateral bands, and it prevents hyperextension of the PIP.

The purpose of this practice forum is to present a simple orthosis design that meets the recommendations outlined by Peck and Howell<sup>4</sup> and also ensures that flexion of the PIP joint is maintained.

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### Materials used

1. 1.8-mm thermoplastic (Orfit)
2. Adhesive hook velcro
3. Nonadhesive loop velcro
4. Kinesiology tape
5. Hole-punch pliers (Fig. 1)

### Fabrication

1. The orthosis pattern should be oblong shaped in corresponding length to the affected digit. A dot is made with a crayon on the center of the material (Fig. 2).
2. The hole-punch pliers are used to make a 4-mm diameter hole, where the dot was drawn. The material is then placed in hot water.
3. When ready for molding, the thermoplastic pattern is woven onto the digit via the hole in the center (Fig. 3). The therapist ensures that the orthosis is shaped so the PIP is in approximately 20° flexion and the distal interphalangeal joint is in extension. Velcro straps are fixed to adhesive velcro hook located on the volar trough at the distal interphalangeal joint and the dorsal trough over the PIP flexion (Fig. 4).
4. Kinesiology tape can be applied at the base of the nail bed to the base of the middle phalanx when the orthosis is applied. Care must be taken not to cross the PIP (Fig. 5).

### Conclusion

An alternative simple and custom-made orthosis has been presented to manage the mallet finger. The proximal velcro strap can be removed routinely to allow for flexion of the PIP joint while

inhibiting full extension or hyperextension to this joint (Fig. 6). The orthosis can be easily removed for checking the skin. The addition of kinesiology tape over the terminal tendon offers additional protection against the competing force of flexor digitorum profundus when the orthotic device is removed.

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Fig. 1. Materials and tools.



Fig. 2. Thermoplastic pattern with dot.

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