

The Metacarpal Mitt Splint for 2nd-5th Metacarpal Fractures: A Prospective Case Series

Daniel Y. Hong MD, Chimere O Ezuma BS, Peter C Noback MD, Liana J Tedesco MD, Robert J. Strauch MD

Introduction

Metacarpal fractures of the index, long, ring, and small fingers are common. Typical treatment involves immobilization of the MCP and IP joints in an intrinsic plus position. We propose a "metacarpal mitt" that leaves the wrist, PIP, and DIP joints free

Methods

Inclusion:

- Metacarpal fracture of IF, LF, RF, and SF
- > 18 YO with minimum follow up 3 weeks
- All fracture types (transverse, oblique, angulated, comminuted; displaced, nondisplaced) and locations (neck, shaft, base) included

Exclusion:

- First metacarpal fracture
- Open fractures
- Joint dislocation

Follow-up:

- Quick DASH scores at 2 months post-injury
- Assessment of functional outcome

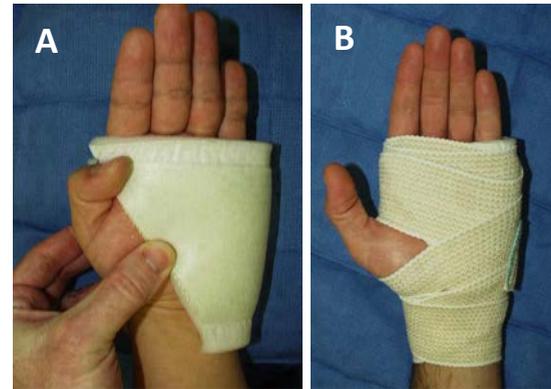


Figure 1. The "metacarpal mitt" splint. (a) Fiberglass immobilization of the metacarpals only, allowing some but not full MCP flexion. As the splint is hardening, 3-point molding can be done to prevent fracture displacement. (b) Final splint overwrapped with ace bandage is shown.

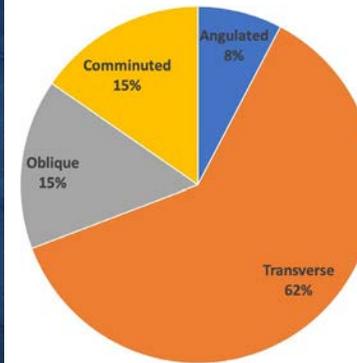


Figure 2. Fracture type distribution

Results

- Total 13 patients (10 male, 3 female)
- 9 small, 3 ring, 1 long finger
- 4 nondisplaced, 9 displaced fractures
- 3 neck, 8 shaft, 2 base fractures
- All fractures were either immobilized in-situ given minimal initial displacement (n=8) or close reduced and then immobilized (n=5)
- Median fracture alignment after immobilization with the metacarpal mitt was 5 degrees (coronal) and 20 degrees (sagittal) angulated with no shortening

- There was no fracture displacement upon follow-up in any patient
- Upon follow-up, there was no malrotation or extensor lag in any patient
- 4 patients had decreased terminal flexion in the MCP joint (n= 4), PIP joint (n=2), and DIP joint (n=2) 3 weeks post-injury
- This mostly resolved upon final follow-up of all patients (two patients had remaining loss of 20 degrees of MCP flexion on average)
- Median Quick DASH was 1.2 at 2 months post-injury (n=8). No patients required operative intervention.

Conclusions

The metacarpal mitt is a novel splint that can be used to treat non-thumb metacarpal fractures with good functional outcome scores upon 2 month follow-up.

We prefer metacarpal immobilization with this "metacarpal mitt" splint, as it allows rapid finger mobilization with non-inferior fracture immobilization.