

# Management of Complications with Hand Fractures



Varun K. Gajendran, MD<sup>a,\*</sup>, Vishal K. Gajendran, BS<sup>b</sup>,  
Kevin J. Malone, MD<sup>a</sup>

## KEYWORDS

- Hand fractures • Phalanx fractures • Metacarpal fractures • Complications • Stiffness • Malunion
- Nonunion • Infection

## KEY POINTS

- The most relevant complications of metacarpal and phalangeal fractures include stiffness, malunion, nonunion, arthritis, infection, and complex regional pain syndrome.
- These complications can occur with both operative and nonoperative treatments.
- Surgical treatment can often be challenging because of the complex anatomy and the need to simultaneously address the bone, joint, and soft tissues to achieve good outcomes.
- With careful attention to detail, surgery can produce good to excellent outcomes, although salvage operations may be necessary in some cases.

## INTRODUCTION

Fractures of the metacarpals and phalanges account for more than 40% of all upper extremity fractures and are associated with tremendous financial burden and societal costs.<sup>1</sup> A recent epidemiologic study from the Netherlands revealed that hand fractures were the most expensive subgroup of all fractures, resulting in an excess of \$278 million in annual costs and loss of productivity.<sup>2</sup> Because of the intricate anatomy within a confined area, surgical treatment can be challenging and complications are not uncommon with both operative and nonoperative treatments.<sup>3–12</sup> Therefore, the treating hand surgeon must be able to promptly recognize complications and treat them effectively to optimize functional outcomes. Stiffness is by far the most common complication, followed by malunion, posttraumatic arthritis, nonunion, infection, and chronic pain syndromes.<sup>3,6,7,11</sup>

Nonoperative management of these fractures, while appropriate in many instances, can lead to complications and severely compromise hand function.<sup>3</sup> Operative treatment has the potential to mitigate these complications and optimize mechanics and function, but it also has the potential to cause those very same complications, as well as others such as infection, hardware-related issues, and nonunion.<sup>3,6,7,11,12</sup> Therefore, all of these risks must be carefully considered in the context of the injury, along with specific patient characteristics such as age, activity level, occupation, and vocational interests to optimize outcomes and minimize complications.

## STIFFNESS

Stiffness is not only the most common complication encountered, but it is also unfortunately the most difficult to treat.<sup>13</sup> High-energy and open

---

Disclosures: No disclosures (V.K. Gajendran, V.K. Gajendran); Paid consultant for Synthes and instructor/lecturer for AO (K.J. Malone).

<sup>a</sup> Department of Orthopedic Surgery, MetroHealth Medical Center, 2500 MetroHealth Drive, Cleveland, OH 44109, USA; <sup>b</sup> University of Toledo College of Medicine, 2801 West Bancroft Street, Toledo, OH 43606, USA

\* Corresponding author.

E-mail address: [varun182@gmail.com](mailto:varun182@gmail.com)

Hand Clin 31 (2015) 165–177

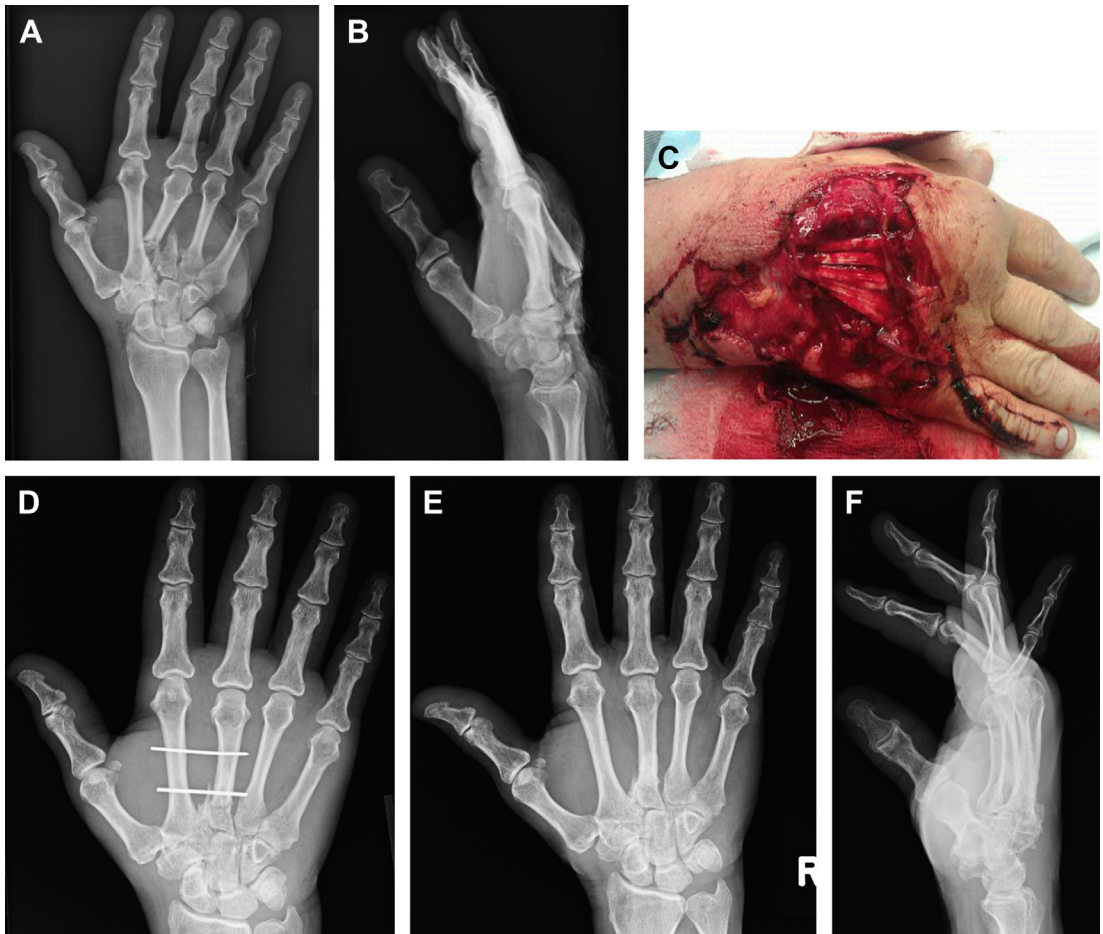
<http://dx.doi.org/10.1016/j.hcl.2014.12.001>

0749-0712/15/\$ – see front matter © 2015 Elsevier Inc. All rights reserved.

fractures are at greater risk for developing stiffness, as are crush injuries and those with extensive injury to the surrounding soft tissue envelope, as illustrated in **Fig. 1**.<sup>4,7,12</sup> Phalanx fractures, particularly those around the proximal interphalangeal (PIP) joint, are more predisposed to developing stiffness than metacarpal fractures.<sup>12,14</sup> Immobilization for 4 weeks or greater is also likely to result in stiffness, so early active motion must be instituted under the care of a skilled hand therapist. Therefore, stable fracture fixation with careful handling of the soft tissue envelope is desirable to allow early motion.<sup>7,11</sup>

There is considerable debate about the use of specific types of implants and their implications for early motion and prevention of stiffness. Ring<sup>15</sup> and Page and Stern<sup>4</sup> advocated the use of larger implants, particularly in the phalanges, to provide added stability and allow early active

motion to avoid stiffness. This concept has been supported by other studies showing good results and relatively low complication rates with plate fixation in the metacarpals and phalanges.<sup>16</sup> However, a few studies have raised concerns about the possibly higher rates of complications including stiffness, malunion, nonunion, tendon rupture, and infection that have been observed in nearly 50% of cases of plate fixation, requiring secondary procedures.<sup>8,10,12,14</sup> K-wire fixation, while more biologically friendly, can have problems with infection and loss of fixation that may lead to malunion, nonunion, stiffness, and compromised function.<sup>17-19</sup> Ultimately, there are advantages and drawbacks to each technique and implant that must be matched with the patient and fracture type. K-wire fixation is preferable in acute fractures when it achieves adequate stability to allow early



**Fig. 1.** Anteroposterior (AP) (A) and lateral (B) radiographs of a patient with an open, comminuted middle finger metacarpal base fracture with severe associated dorsal degloving injury (C) treated with pinning to the adjacent second metacarpal (D), which healed uneventfully in a shortened position (E, F); however, the patient required extensor tenolysis 6 months later for extension contractures of multiple MCP joints and a 10° extensor lag at the middle finger MCP joint, which allowed her to regain full motion.

Download English Version:

<https://daneshyari.com/en/article/4058919>

Download Persian Version:

<https://daneshyari.com/article/4058919>

[Daneshyari.com](https://daneshyari.com)