

# Vascularized Composite Tissue Spare Part Transfer for Central Hand Defect Reconstruction: Case Report

Jessica Billig, MD,\* Shepard P. Johnson, MBBS,† Takeshi Ogawa, MD, PhD,\*  
Kevin C. Chung, MD, MS\*

Injuries to the hand with loss of joints, tendons, nerves, and soft tissue may require complex, innovative reconstructive techniques to achieve a favorable functional and aesthetic outcome. We present a case of a manual laborer who sustained a multifaceted injury from a metal press machine with loss of composite structures including the middle and ring finger metacarpophalangeal joints, flexor and extensor tendons, digital nerves, and dorsal/volar soft tissues. Reconstruction included using the spare parts technique for transferring his ring finger proximal interphalangeal joint as a pedicle to reconstitute the missing metacarpophalangeal joint of his middle finger. The soft tissue from the ring finger was rearranged to provide aesthetic coverage of the hand with like-to-like reconstruction of the glabrous and non-glabrous skin. (*J Hand Surg Am. 2016;41(1):76–80. Copyright © 2016 by the American Society for Surgery of the Hand. All rights reserved.*)

**Key words** Hand trauma, metacarpophalangeal joint reconstruction, vascularized joint transfer.

THE METACARPOPHALANGEAL (MCP) joint contributes substantially to hand dexterity.<sup>1–3</sup> In addition to providing 77% of the arc of finger flexion, the MCP joint permits lateral movement and circumduction to facilitate thumb opposition for pinch grip.<sup>3</sup> Management of a severely traumatized MCP joint is an operative challenge because there is no established reconstructive algorithm. Treatment options include amputation, arthrodesis, interposition arthroplasty, and autologous joint transfer.<sup>1,2</sup> However, many of these surgical techniques leave much to be desired from a functional and an aesthetic standpoint.

We present a case of a laborer who sustained a traumatic loss of his left middle and ring finger MCP joints. Operative repair expanded upon Chase's concept of spare parts<sup>4</sup> to reconstruct the middle finger MCP joint with a vascularized pedicled joint transfer of the intact proximal interphalangeal (PIP) joint from his ring finger. This technique restored the joint and flexor/extensor tendons simultaneously while matching glabrous and nonglabrous skin for soft tissue coverage.

## CASE REPORT

A healthy 32-year-old right-handed man sustained a 6-cm circular defect in his left palm from a metal press injury. This resulted in loss of the MCP joints and associated flexor/extensor tendons of the ring and middle fingers (Fig. 1). Examination revealed diminished sensation to the ring finger and ulnar aspect of the middle finger, but both digits were vascularly intact, as confirmed by Doppler ultrasound of the digital arteries.

Emergent wound exploration revealed uninjured digits distal to the amputated MCP joints, cleanly severed flexor and extensor tendons, and preservation of the vascular supply to the middle and ring fingers

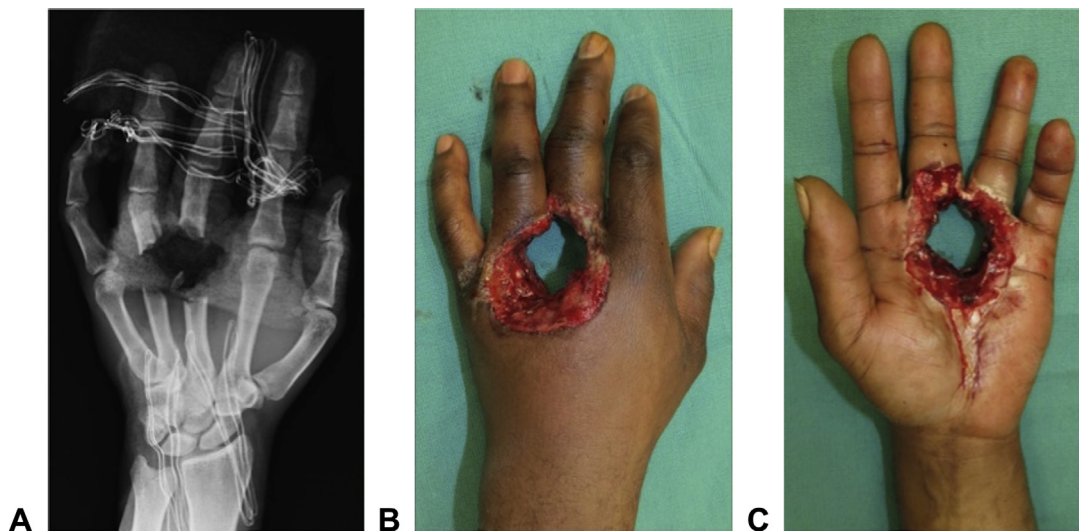
From the \*Section of Plastic Surgery, University of Michigan Health Systems; and the †Department of Surgery, Saint Joseph Mercy Hospital, Ann Arbor, MI.

Received for publication August 5, 2015; accepted in revised form October 24, 2015.

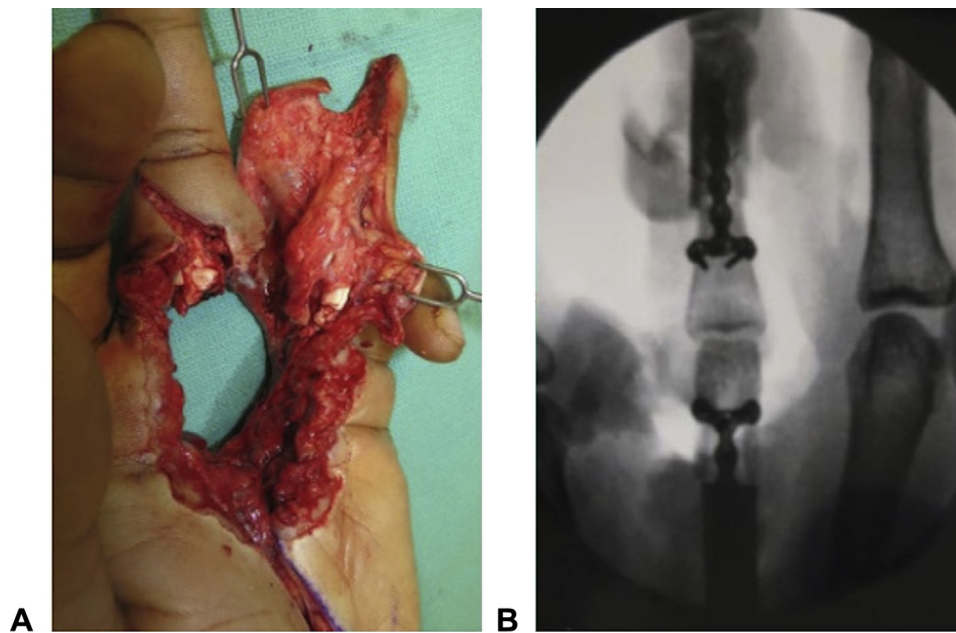
No benefits in any form have been received or will be received related directly or indirectly to the subject of this article.

**Corresponding author:** Kevin C. Chung, MD, MS, Section of Plastic Surgery, University of Michigan Health System, 2130 Taubman Center, SPC 5340, 1500 E. Medical Center Dr., Ann Arbor, MI 48109-5340; e-mail: [kechung@umich.edu](mailto:kechung@umich.edu).

0363-5023/16/4101-0012\$36.00/0  
<http://dx.doi.org/10.1016/j.jhssa.2015.10.025>



**FIGURE 1:** Preoperative data. **A** Preoperative x-ray of the left hand demonstrates traumatic loss of the ring and middle finger MCP joints. **B, C** Intraoperative photographs represent the extent of soft tissue and joint loss.



**FIGURE 2:** Vascularized pedicled joint transfer. **A** Intraoperative photograph demonstrates the ring finger PIP pedicled transfer to the long finger MCP joint. **B** Intraoperative x-ray under fluoroscopy verifies appropriate fixation of the transferred PIP joint from the ring finger to the MCP joint of the middle finger.

on the radial and ulnar aspect of the digits, respectively. After the initial debridement, we discussed reconstructive options with the patient. Operative repair involved a pedicled joint transfer of the ring finger PIP joint to reconstruct the middle finger MCP joint. The ring finger was vascularized, but insensate, which provided a good source of tissue for composite reconstruction of the middle finger.

A midaxial incision was made along the radial border of the ring finger to preserve both glabrous

and nonglabrous skin. Skin flaps were elevated at the level of the PIP joint while avoiding the ulnar-sided neurovascular supply to the joint (Fig. 2). We then transferred the ring finger PIP joint with sufficient bone length to replace the missing middle finger MCP joint. The bone length needed was determined during surgery by measuring the bony defect between the middle finger metacarpal and its proximal phalanx. Because of trauma to the donor finger proximal phalanx, the new middle finger metacarpal was short

Download English Version:

<https://daneshyari.com/en/article/4065972>

Download Persian Version:

<https://daneshyari.com/article/4065972>

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