Reconstructing Traumatic Defects in the Head of the Proximal Phalanx
Using an Osteoarticular Pedicle Flap Taken From the Capitate

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Introduction: To report the reconstruction of traumatic defects in the head of the proximal phalanx using an osteoarticular pedicle flap taken from the capitate.

Materials and Methods: From January 2009 to December 2011, 22 patients with traumatic defects in the head of the proximal phalanx were treated. All injuries involved one condyle of the proximal phalanx. There were 19 male and 3 female patients; the mean age was 32 years. The injuries occurred in the index (n=10), middle (n=8), and ring (n=4) fingers. The flap was based on the dorsal metacarpal artery. At the final follow-up, we assessed space narrowing of the proximal interphalangeal joint and flap necrosis on plain radiography. We measured active motion and pinch and grip strength of the hand and compared all measurements with those on the opposite side. Injured-joint pain and donor-joint pain were rated using a visual analog scale. Hand function was assessed using the Disabilities of the Arm, Shoulder, and Hand scale.

Results: Patient follow-up lasted an average period of 52 months. At the final follow-up, we noted narrowing of the proximal interphalangeal joint in 4 cases, and no flap necrosis was noted. The mean active motion arc of the injured and opposite proximal interphalangeal joints was 45° and 88°, respectively. The mean pinch strength of the injured and opposite hands was 5.1 and 5.9 kg, respectively. The mean grip strength of the injured and opposite hands was 42 and 45 kg, respectively. Mild recipient joint pain was noted in 3 patients and mild donor joint pain was observed in 1 patient. The mean score of the Disabilities of the Arm, Shoulder, and Hand questionnaire was 8.

Conclusions: The use of an osteoarticular pedicle flap taken from the capitate is useful technique for resurfacing traumatic defects of the head of the proximal phalanx, which is acceptable for restoring the contour of the phalangeal head.

The Second Hospital of Qinhuangdao is a small hospital located in countryside in China. Dr. Xu Zhang is the Chief Director of the Department of Hand Surgery. Since 2007, the department has published over 30 articles in the Journal of Hand Surgery (Am and Eur), Journal of Trauma, Microsurgery, Plastic and Reconstructive Surgery, and Journal of Reconstructive Microsurgery. The articles introduce many new surgical techniques, including the treatments of Mallet deformities, Boutonniere deformity, traumatic defects in the joints, and Bennett fracture, as well as flap transfer, thumb reconstruction, and replantation. The techniques are all original and provide novel approaches for the treatment of those common injuries. Our team will continue to contribute to improvement of hand surgery and therapies. As hand surgeons from a small hospital, we appreciate this great opportunity to attend 2014 American Association for Hand Surgery Meeting, and to meet with excellent colleagues around the world.