A Bilobed Second Dorsal Metacarpal Artery-Based Flap for Complex Soft-Tissue Defects at the Thumb Metacarpophalangeal Joint

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Introduction: To introduce reconstruction of complex soft-tissue defects at the metacarpophalangeal joint of the thumb using a bilobed second dorsal metacarpal artery-based island flap taken from the dorsum of the proximal phalanges of the index and middle fingers. We also report results with the use of the technique.

Materials and Methods: From February 2008 to January of 2012, we used the bilobed second dorsal metacarpal artery-based island flap in 17 patients with two defects at the metacarpophalangeal joint of the thumb. The mean age at the time of surgery was 27 years. The mechanism of injury was crushing and the injuries occurred on the right hand in 12 patients and on the left hand in 5 patients. The average size of the dorsal defects was 2.1 × 3.9 cm; the mean size of the volar defects was 2.5 × 4.4 cm. The mean size of the flaps taken from the index and middle fingers was 2.4 × 4.3 cm and 2.9 × 4.8 cm, respectively. The mean pedicle length was 4.3 cm.

Results: All flaps survived completely. Neither venous congestion in the flap nor wound infection was observed. At a mean follow-up of 15 months, the mean active motion arc of the thumb metacarpophalangeal joints was 45 degrees. The average active motion arcs of the metacarpophalangeal and proximal interphalangeal joints of the index fingers were 80 degrees and 92 degrees, respectively. The measurements on the opposite sides were 86 degrees and 98 degrees, respectively. Motion of the donor fingers was similar to that on the opposite side. The mean span of the first and second webs was 72 degrees. The mean values of static two-point discrimination of the donor sites of the index and long fingers were 4 and 5 mm, respectively. No patient reported scar pain in the donor fingers.

Conclusions: Transferring the bilobed second dorsal metacarpal artery-based island flap is a useful technique for simultaneous reconstructing two defects at the metacarpophalangeal joint of the thumb.