ABSTRACT

Purpose: Intramedullary fixation (IMF) has emerged as an effective treatment for metacarpal fractures. Benefits include stable fixation that allows early postoperative rehabilitation and high fracture union rates, without increased complications. Both headless compression screws and intramedullary threaded non-compressive nails have been described for this purpose; however, prospective outcomes reporting are lacking. This study assessed the outcomes of metacarpal fractures treated with IMF including patient-reported outcomes (PROs), grip strength, total active digit motion (TAM), and complications.

Methods: A prospective multicenter trial enrolled consecutive patients with closed, extra-articular metacarpal fractures treated with IMF. Radiographic healing was assessed at each postoperative visit and PROs included pain scores, QuickDASH and Short Form Survey (SF-12) scores. Grip strength, goniometric motion measurements, and complications were also obtained.

Results: One-hundred-one fractures were treated in 82 patients with an average age of 33 years and mean follow-up of 69 days. Most patients were male (70%) laborers (28%) who smoke tobacco (26%). QuickDASH scores improved by 40 points, with a final mean of 17 following metacarpal IMF. SF-12 components of PCS and MCS at final follow-up were 55.95 and 48.74, respectively. Final average grip strength was 15 kg and TAM was 228o. Four complications (3.9%) occurred, including 1 hardware failure, 2 proximal screw migrations, and 1 metacarpophalangeal joint contracture, with 3 of these patients requiring revision surgery.

Conclusions: IMF is a reliable technique for treatment of most metacarpal fractures with satisfactory PROs, excellent strength and motion, and a low complication rate. IMF should be considered for closed, extra-articular metacarpal fractures.