Intramedullary fixation (IMF) is an effective treatment for metacarpal fractures. Benefits include: stable fixation that allows early postoperative rehabilitation, high fracture union rates, no increase in complications. IMF 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.

One-hundred-one fractures were treated in 82 patients with an average age of 33 years (range 14-70 years; SD: 12.3). Most patients were male (70%) laborers (28%) (Table 1).

QuickDASH scores improved by 40 points, with a final mean of 17 following metacarpal IMF (Figure 2). 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 228° (Figure 3).

There was no significant differences in the average PROs (QuickDASH or SF-12 scores) between the ‘closed’ and ‘open’ reduction cohorts at each follow-up visit.

Average TAM of the ‘closed’ reduction cohort (248.6°) was significantly higher than the ‘open’ cohort (210.3°) at final follow-up (p = 0.008).

There was significantly more digit motion at the second post-operative visit in the ‘open’ reduction group (average TAM of 218.2°) compared to the and ‘malunion’ cohort, (160°; difference of 58.2°).

Conclusions

IMF achieves sufficient stability to allow for early motion and restoration of anatomic function while minimizing complications.

Results from this study support that IMF is a reliable technique for treatment of closed, extra-articular metacarpal fractures or malunions that produces favorable outcomes with infrequent complications.