

Background

Metacarpal fractures are common in the upper extremity. For transverse and short oblique fracture patterns, intramedullary headless compression screws (IMHCSs) can be an appropriate fixation technique. Historically, this fixation is performed through a retrograde approach [1-2].

However, the retrograde approach creates defects in the extensor tendon, the sagittal hood, and the articular surface of the MCPJ, which can result in extensor lag and posttraumatic arthritis [3-4]

Recently, an antegrade approach to IMHCS placement has been described, which circumvents the concerns around the traditional retrograde approach [5].

Here, we describe our experience with the antegrade approach to IMHCS placement.

Methods

A retrospective chart review was performed for all patients who had undergone fixation of metacarpal fractures via an antegrade approach to IMHCS.

Charts were reviewed for

- Patient factors (age, gender, handedness, occupation)
- Injury characteristics (date of injury, mechanism of injury, digits involved),
- Operative details (date of surgery, type and size of screw),
- Long-term outcomes (range of motion, complications, need for revision procedures)

QuickDASH scores were obtained from patients that could be contacted at 6 month follow-up.

Figure 1: Operative Results



Figure 1: Index finger metacarpal fracture pre-operatively (left) and at 3-month follow-up after antegrade approach to IMHCS (right).

Results

A total of 27 metacarpal fractures (24 patients) were treated with antegrade IMHCS fixation during the study period.

Patient comorbidities include tobacco use (n=8), active methamphetamine use (3), and diabetes (2). Common mechanism of injuries include punching an object (14), ground level falls (5), and motorcycle accident (3).

A majority of patients had fixation performed within two weeks of injury, and patients were followed for an average of 14.5 weeks.

At final follow-up, 19 patients have full range of motion of the injured digit, and three patients are able to form a composite fist with 1cm or less of gapping at the injured digit.

The median QuickDASH Disability Score was 2.3 (IQR 0.0 – 7.4).

Conclusions

Antegrade approach to IMHCS placement is a safe and effective approach for fixation of transverse and short oblique metacarpal fractures. Patients have full or nearly-full recovery of range of motion and very minimal disability following fixation.

References

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