

Case Study:

Use of the INnate™ Intramedullary Threaded Nail for
Spiral Oblique Fractures of the 3rd and 4th Metacarpals



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Pre-op



Case Presentation

36-year-old male patient who sustained spiral oblique fractures with slight comminution to the 3rd and 4th metacarpals after a ground level fall onto his left hand. Attempted nonoperative management for 10 days and had limited function with reported 9/10 pain. Patient elected to proceed with surgery approximately 16 days after his injury.

Pre-op Plan

Dr. Daley chose closed reduction intramedullary fixation (CRIF) with INnate to treat both metacarpals. Reasoning is minimally invasive with immediate stabilization and postoperative mobilization. This technique avoids significant periosteal stripping, incisions, and possible extensor tendon injuries or adhesions associated with an open reduction intramedullary fixation (ORIF). It also enables immediate range of motion without pins and a splint that requires a secondary procedure at a later date.

Operative Findings and Approach

Dr. Daley used the provided depth gauge to determine that 4.5mm diameter by 45mm length INnate threaded nails were needed for both metacarpals. Starting with the 3rd metacarpal, he made a 2mm incision on the dorsal third of the metacarpal head and inserted the provided K-wire across the fracture site under fluoroscope. He then used the cannulated drill to drill over the guidewire, and then threaded the cannulated INnate over the guidewire. Using the cannulated driver, the INnate nail was driven until the head was beneath the articular cartilage, to achieve distal purchase in the subchondral bone. Proximal purchase was achieved at the isthmic level within the IM canal. The same steps were taken for the 4th metacarpal. Total surgery time was 25 minutes.

Post-op



Benefits of this technique – immediate ROM, no splint, immediate fracture stabilization for this fracture pattern. No tourniquet pain, single nylon suture per metacarpal, small dressing.

Postoperative protocol – no splint, immediate ROM, limited weight bearing on operative extremity, no lifting greater than 1lb for the first 2 weeks.

Follow-up

On post-op day #5, dressing was removed and patient was able to shower, wash his hands, and apply a bandage over the suture site.

At patient's 2-week follow-up, he had near complete range of motion and significant improvement in pain (9/10 preoperatively to 4/10 at first postoperative visit). He had already returned to a semi manual labor job with light duty use of his operative hand. He failed to return for any further follow-up appointments. Patient was called and had returned to all work-related activities and hobbies without difficulty or pain and did not see the need for further follow-up appointments.

Discussion

For Dr. Daley, INnate is a game changer and is now his preferred method of treatment. It is minimally invasive, does not compress the fracture and does not require tourniquet use, postoperative casting or splinting, and allows for immediate mobilization and rapid recovery. Additionally, none of his patients to date have required postoperative therapy or secondary surgeries. It is an efficient technique that is easy to learn and perform with great reproducibility.