

## Case Study:

Use of the INnate™ Intramedullary Threaded Nail for Displaced, Spiral Oblique and Transverse Fractures of the 3rd, 4th, and 5th Metacarpals

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Pre-op



## Case Introduction

Patient was a 62-year-old right-hand-dominant male laborer who suffered an impact injury to his left metacarpals when he fell and inadvertently struck the floor with his left hand. He needed to get back to work as quickly as possible due to a time-sensitive project.

## Case Presentation

Patient had a midshaft spiral oblique fracture with displacement to his 3<sup>rd</sup> metacarpal, a midshaft transverse fracture with displacement to his 4<sup>th</sup> metacarpal, and a midshaft spiral oblique fracture to his 5<sup>th</sup> metacarpal. He needed stable fixation, rotational alignment, and immediate range of motion (ROM) to get back to work as soon as possible.



## Pre-op Plan

Dr. Iorio considered plates and screws, however, this technique would have provided less stable fixation, soft tissue dissection, and concern for tendon adhesions. He also considered K-wires as an intramedullary fixation approach, but was concerned about the lack of canal fill and complications such as infections. Dr. Iorio decided to use INnate threaded nails for intramedullary fixation, as the nails were long and wide enough in diameter to fill the canal, providing stable fixation for rotationally unstable fractures. Additionally, they would provide early ROM.



Intra-op



## Operative Findings and Approach

Dr. Iorio first performed longitudinal traction in the operating room to restore alignment. For the 4<sup>th</sup> metacarpal, he made a small incision over the dorsal aspect to aid in reduction. Once reduction was achieved, he made a 2mm incision on

### Post-op



the dorsal third of the metacarpal head and inserted the provided K-wire across the fracture site under fluoroscope. He then used the INnate depth gauge to determine that a 4.5mm diameter threaded nail was needed for the 3<sup>rd</sup> and 5<sup>th</sup> metacarpals and a 3.6mm diameter threaded nail was needed for the 4<sup>th</sup> metacarpal (due to a narrower isthmus). Dr. Iorio again used the INnate depth gauge to determine that 50mm length threaded nails were needed for the 3<sup>rd</sup> and 4<sup>th</sup> metacarpals and a 45mm length nail was needed for the 5<sup>th</sup> metacarpal. Dr. Iorio proceeded to use the cannulated drill to drill over the guide wire and threaded the cannulated INnate nail until the head was beneath the articular cartilage, to achieve distal purchase in the subchondral bone. Proximal purchase was achieved at the isthmus level within each intramedullary canal, with a total surgery time of 25 minutes.

### Follow-up

At 2 weeks post-op, patient achieved full ROM and full return to work, which would have been difficult to replicate with other fixation techniques or implants.

### Discussion

INnate allowed Dr. Iorio to address displaced, spiral oblique and transverse fractures to maintain height and provide rotational stability. INnate has various lengths and diameters that allow canal-fill and affords excellent fixation and rotational stability. The implant does not require additional resources, and follow-ups are typically easy and straight-forward because patients often do not need formal therapy, as mobilization is immediate. This allows patients to minimize their downtime and return to work or daily activities faster than other implants and surgical approaches.