

## Case Study:

Use of the InFrame™ Intramedullary Threaded Micro Nail for an Oblique Base Fracture to the 5<sup>th</sup> Proximal Phalanx

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Pre-op



## Case Presentation

Patient was a 39-year-old female hair stylist who suffered an oblique base fracture to her 5<sup>th</sup> proximal phalanx from an outstretched hand during a fall. A percutaneous approach with rotational and bending stability was desired to achieve early range of motion, allowing the patient to perform her job as quickly as possible.

## Pre-op Plan

Dr. Manon-Matos typically addresses proximal phalanx base fractures with K-wire fixation due to the narrow intramedullary (IM) canal and minimally invasive approach but wanted stronger fixation without complications such as pin site infections. He also considered plates and screws but felt that the extent of dissection necessary would have a prohibitively high risk of post-op stiffness. Dr. Manon-Matos proceeded with InFrame because the cannulated, fully threaded micro nail has a 2.0mm diameter design that allowed him to use more than one implant, in a minimally invasive approach, to create a construct that achieved rotational and bending stability. InFrame also included an innovative dual diameter guidewire that facilitated precise and efficient placement by removing the need for reaming and allowing the implant to be inserted over the trailing end of the guidewire with ease.

## Operative Findings and Approach

Once anatomic reduction was achieved, Dr. Manon-Matos inserted the dual diameter guidewire across the fracture site from the radial proximal cortex to the ulnar distal cortex under fluoroscopy to stabilize the fracture and accurately align the desired final implant position. Next, he used the depth gauge to determine that a 26mm micro nail was needed for the 5<sup>th</sup> proximal phalanx. The larger diameter end of the guidewire was used to push the guidewire distally until the smaller diameter end was across the fracture. He then inserted the cannulated InFrame micro nail until bi-cortical purchase was achieved at both the distal and proximal ends to restore anatomic length

2-Weeks Post-op



9-Weeks Post-op



and correct angulation. After Dr. Manon-Matos verified the final position of the first implant under fluoroscope, he used the same methodology to place the second InFrame micro nail, but in a different plane from the first implant. He inserted the second dual diameter guidewire from the ulnar proximal cortex to the radial midshaft cortex under fluoroscopy and used a 14mm micro nail to achieve relative stability of the articular base, prevent rotation, and complement the longer screw for increased stability. Total surgery time to create the “Y” construct was approximately 20 minutes.

## Follow-up

At 2-weeks post-op, the patient had minimal pain and no signs of infection, but experienced limited ROM. Patient was recommended to conduct early ROM exercises under guidance of therapy with a removable TKO brace. By 5-weeks post-op, the patient had weaned off the brace and had nearly full active ROM without any pain, malrotation, or angulation. Final follow-up occurred at 9-weeks post-op and the patient had full active ROM, symmetry to the contra-lateral injured hand, and returned to unrestricted activity without any complications.

## Discussion

With InFrame, Dr. Manon-Matos achieved his operative goals of bending and rotational stability, early mobilization, and zero complications for his patient. The 2.0mm diameter design and robust length offering of InFrame allowed him to create an optimal construct to address his patient’s specific needs. Dr. Manon-Matos was able to utilize the implants to create a “Y” construct in the narrow IM canal and the unique dual diameter guidewire to precisely and efficiently place both implants in only 20 minutes. His patient experienced anatomic and functional restoration of her proximal phalanx, thereby returning to her daily activities faster than other implants and surgical approaches.