

## Case Study:

Use of the InFrame™ Intramedullary Threaded Micro Nail for an Oblique, Comminuted Fracture of the 3<sup>rd</sup> Proximal Phalanx

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Pre-op



## Case Presentation

Patient was a 33-year-old male who suffered a midshaft oblique fracture with comminution to his 3<sup>rd</sup> proximal phalanx from a crush injury. An operative solution that achieved rotational stability and early range of motion (ROM) was desired due to the unstable fracture pattern and need to return to work quickly.

## Pre-op Plan

Dr. Lesley typically considers lag screw fixation for oblique fracture patterns but wanted to achieve early ROM without complications such as stiffness. A minimally invasive approach using K-wires was an option but too often result in poor fixation, require a long period of immobilization, and have high infection rates. Dr. Lesley chose InFrame because the cannulated, fully threaded micro nail has a 2.0mm diameter design that allows cross implantation constructs to achieve rigid fixation, rotational stability, and early ROM. The innovative guidewire removes the need for reaming and simplifies implant placement, resulting in accuracy and reduced surgical time. Biomechanical testing has demonstrated the superior rigidity with InFrame compared to other modalities.

## Operative Findings and Approach

The patient suffered a very unstable crush injury to the distal half of his proximal phalanx. Upon reduction, Dr. Lesley inserted the dual diameter guidewire across the fracture site from the ulnar proximal cortex to the radial distal cortex under fluoroscope to stabilize the fracture and accurately align the desired final implant position. Next, he used the depth gauge to determine that a 40mm micro nail was needed for the 3<sup>rd</sup> proximal phalanx. The larger diameter of the guidewire was used to push the guidewire distally until the smaller diameter was across the fracture. He then threaded the InFrame micro nail until bi-cortical purchase was achieved at both the distal and proximal ends. Once he verified the final position of the first implant under

Post-op



under fluoroscope, Dr. Lesley used the same methodology to place the second micro nail but in a different plane from the first implant. He then inserted the second dual diameter guidewire from the radial proximal cortex to the ulnar distal cortex and used a 42mm micro nail. The intramedullary space was large enough for Dr. Lesley to create an “X” configuration with two InFrame implants in approximately 25 minutes.

## Follow-up

At two weeks, the patient did not experience any pain and had excellent ROM. He was able to return to work quickly due to the rigid fixation and rotational stability achieved with InFrame.

## Discussion

The 2.0mm diameter design and robust length offering allowed Dr. Lesley to create a construct that was long enough to achieve bi-cortical bone purchase, resulting in rotational control and early ROM. The delivery mechanism of InFrame was also important to the success of the operation because it simplified a more precise placement in only 25 minutes of total surgery time. The rigid fixation and rotational stability allowed his patient to minimize downtime and return to work faster than other implants and surgical approaches.