Case Study:

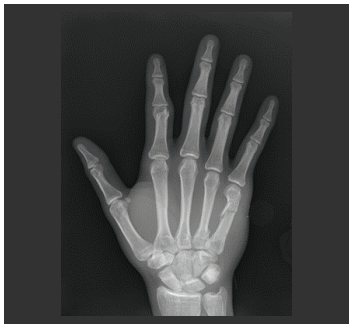
Use of INnate™ Intramedullary Threaded Nail for 4th and 5th Metacarpal Fractures from Motor Vehicle Crash

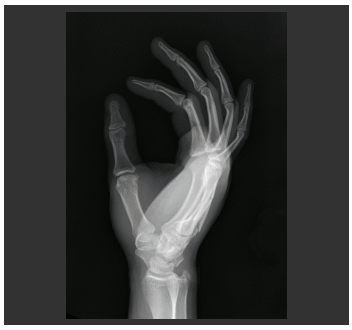
David Wilson, MD
Brooke Army Medical Center (BAMC)
San Antonio, TX

EXSOMED™
Innovations in Hand Surgery

David Wilson, MD
Brooke Army Medical Center (BAMC) San Antonio, TX

Pre-op





Case Presentation

Patient was a 22-year-old male who suffered a crush injury to his metacarpals during a motor vehicle crash. He had a base oblique fracture and a midshaft transverse fracture to his 4th and 5th metacarpals, respectively. Rotational alignment and stabile fixation were desired to allow the patient to return to duty as quickly as possible.

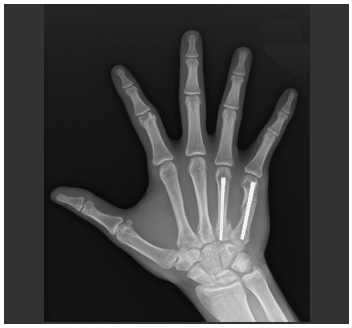
Pre-op Plan

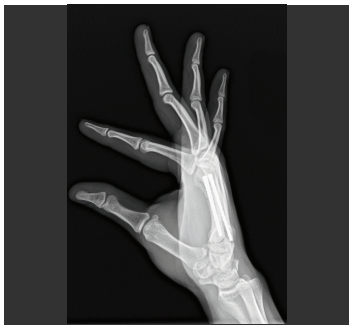
Dr. Wilson considered K-wire fixation to avoid soft tissue dissection but was concerned that the lack of rigidity would lead to rotational deformity. He also considered headless compression screws but the implants were not appropriately sized to fit the narrow isthmus and achieve bi-cortical purchase at both the distal and proximal ends. Dr. Wilson decided to use a percutaneous approach with the INnate threaded nails for intramedullary fixation because the nails were long and wide enough in length and diameter to fill the canal, providing stable fixation for early range of motion.

Operative Findings and Approach

Dr. Wilson used a percutaneous approach to achieve and maintain fracture reduction for each metacarpal fracture. Once reduction was achieved, he made a small stab incision on the dorsal third of each metacarpal head and inserted the provided guidewire across the fracture site under fluoroscope. Dr. Wilson then used the INnate depth gauge to determine that a 3.6mm diameter threaded nail was needed for the 4th metacarpal due to the narrower isthmus and a 4.5mm diameter threaded nail was needed for the 5th metacarpal. He again used the depth gauge to determine that a 50mm and 45mm nail was needed for the 4th and 5th metacarpal, respectively. Dr. Wilson proceeded to use the cannulated drill to drill over the guidewire and implant the cannulated INnate nail until the trailing end was beneath

Post-op





the articular cartilage, to achieve distal purchase in the subchondral bone. Proximal purchase was achieved at the isthmic level within the IM canal with a total surgery time of 20 minutes.

Follow-up

Immediately after surgery, the patient was applied with soft dressing and allowed full active range of motion with weight bearing restrictions of five pounds. At 10 weeks post-op, radiographic evidence of union and anatomic restoration across all fracture sites were achieved with the patient returning to full duty without any restrictions.

Discussion

INnate allowed Dr. Wilson to use a percutaneous, intramedullary approach with appropriately sized implants to achieve three points of fixation. Unlike K-wires and headless compression screws, the diameter and robust length offering of INnate achieves canal fill and stability, resulting in immediate to early range of motion. This allows patients to minimize their downtime and return to work or daily activities faster than other implants and surgical approaches.