

Case Study

Use of the INnate™ Intramedullary Threaded Nail for Midshaft Transverse Fracture of the Fifth Metacarpal



Joseph Styron, MD, PhD

Cleveland Clinic
Cleveland, OH

Dr. Styron completed his residency at the Cleveland Clinic and then pursued two fellowships to hone his subspecialty training in hand and upper extremity at the University of Pittsburgh Medical Center and at Shriners' Hospital in pediatric and congenital hand surgery. Dr. Styron's specialty interests include surgery of the hand, wrist, elbow and shoulder. He has specialized training in nerve and tendon transfers in infants and children unable to move their hands.

Case Presentation

Patient was a 74-year-old left-hand dominant male who sustained a midshaft, transverse fracture to his right fifth metacarpal when he fell from his electric bike while on vacation in Ireland. He was splinted in the emergency department and was told he would need surgery upon his return to the United States. The patient is a lifelong pianist and was extremely concerned about his ability to continue playing music after the accident. During his consultation in the United States two and a half weeks later, he continued to suffer from pain and tenderness, had swelling over the fifth metacarpal, and had some overlap of the small and ring fingers when making a fist. Stable fixation, alignment restoration of the metacarpal, and early range of motion (ROM) were desired to ensure the patient had the best chance to play piano again.

Preop Plan

Dr. Styron considered plates and screws but did not want to immobilize the patient or deal with complications such as tendon adhesions or stiffness. He also considered K-wires but desired stronger fixation without the risk of pin site infections. Dr. Styron chose to proceed with intramedullary fixation with INnate™ because the non-compressive design would prevent shortening and the canal-fill achieved by the implant would result in superior stability, allowing immediate to early ROM.

Operative Findings and Approach

Dr. Styron opted to perform this surgery in a minimally invasive approach. The guidewire was placed in the dorsal one-third of the metacarpal head while performing a reduction maneuver on the metacarpal shaft and the guide pin was passed in a retrograde fashion across the fracture. The cannulated drill was used once the pin placement and depth gauge were confirmed under fluoroscopy.

Dr. Styron inserted a 4.5 mm x 45 mm INnate intramedullary nail, copiously irrigated the wound, and then closed in layers. Total surgery time was 16 minutes.

Preoperative



Postoperative



Follow-up

At the patient's very first postop visit, five days after surgery, he experienced mild tenderness but no actual pain, and was almost at full functionality. He was amazed that the postop wound was the size of an insect sting and played piano for about 50 minutes without any limitations or discomfort.

Discussion

INnate™ has become the primary approach for metacarpal fracture fixation for Dr. Styron because of the excellent stability achieved and minimal disruption of soft tissues. This allows for early ROM, decreasing tendon adhesions and stiffness, and accelerating the patient's return to function. Placement of INnate is simple and straightforward, thereby reducing operative time. The purpose-built design allows for immediate mobilization, minimizing patient downtime and accelerating return to work or daily activities when compared with other implants and surgical approaches.



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www.acumed.net

Acumed USA Campus
5885 NE Cornelius Pass Road
Hillsboro, OR 97124
+1.888.627.9957

OsteoMed USA Campus
3885 Arapaho Road
Addison, TX 75001
+1.800.456.7779

Acumed Iberica Campus
C. Proción, 1
Edificio Oficor
28023 Madrid, Spain
+34.913.51.63.57

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