

Case Study

Use of the INnate™ Intramedullary Threaded Nail to Treat Comminuted Type 1 Open Distal Both Bone Forearm Fracture



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Dr. Dane Daley, a graduate of East Tennessee State University College of Medicine, completed a hand fellowship while at OrthoCarolina. He specializes in orthopedic and hand surgery.

Case Presentation

A 62-year-old right hand-dominant female presented with left type 1 open comminuted intraarticular distal both bone forearm fracture and carpal tunnel symptoms. Initial management consisted of traumatic wound irrigation, closed reduction and splinting with observation of carpal tunnel symptoms, which resolved following reduction. She was then taken to the operating room the subsequent day for irrigation and debridement of the open fracture with ORIF.

Preop Plan

Dane Daley, MD, elected to treat with open irrigation and debridement of the open fracture with skeletal stabilization using the Acu-Loc® 2 Distal Radius Volar Locking Plate and the 4.5 mm x 75 mm INnate™ Intramedullary Threaded Nail.

Operative Findings and Approach

A standard volar approach of Henry was performed for ORIF of the distal radius with the Acu-Loc® 2 Distal Radius Volar Locking Plate. An incision was made over the open ulna fracture site and the open fracture was irrigated and debrided, the fracture was manually reduced and stabilized. Next, a guidewire was passed retrograde through the ulnar head and across the fracture site via direct visualization and fluoroscopic assistance. The cannulated drill was then used over the K-wire, a size 4.5 mm x 75 mm INnate nail was selected, and the threaded cannulated INnate was placed. The INnate nail was driven in until positioned beneath the articular surface, maintaining good purchase in subchondral bone. Proximal purchase was achieved with intracortical fit.

Follow-up

Postoperatively, the patient was splinted with a short arm splint with follow-up at two weeks. At that time, the splint was removed, and she was transitioned to removable wrist brace, early active range of motion, protected weight-bearing, and referral to occupational hand therapy. At three months, she demonstrated radiographic union with decreased wrist range of motion compared to the contralateral side; however, it was functional and painless.

Discussion

For Dr. Daley, closed or open reduction with internal fixation of distal ulnar shaft fractures with INnate intramedullary nail allows for earlier motion and improved pain control anecdotally. This no longer requires the need for longer immobilization with short arm casting, and less long-term symptomatic ulnar sided wrist pain, following isolated or distal both bone forearm fractures. This minimally invasive technique is also reproducible and avoids prominent hardware near the ulnar neurovascular bundle, subcutaneous border of the ulna, or dorsally near the sixth dorsal compartment, all of which can lead to postoperative complications.

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Preoperative



Postoperative



Three Months Postoperative Radiographs