

Case Study

Use of the Acu-Loc[®] 2, INnate[™], and InFrame[™] to Treat Injuries From a Motorcycle Collision



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Dr. Wilson is an orthopaedist at Fort Sam Houston Texas and is affiliated with Brooke Army Medical Center. He received his degree from Uniformed Services University F. Edward Hébert School of Medicine and has been in practice for over 15 years. His subspecialties include elbow and hand surgery.

Case Presentation

The patient is a skeletally mature male presenting with polytrauma due to a motorcycle collision. He sustained numerous injuries including right-hand closed thumb, index, middle, ring, and small finger metacarpal fractures as well as a non-displaced right distal radius fracture.

Treatment

The patient was indicated for surgical stabilization. The goal was immediate active range of motion and allowance for protected partial weight-bearing given his concomitant lower extremity long bone injuries. Dr. Wilson decided to proceed with open reduction of his long oblique middle and ring finger metacarpal fractures to facilitate anatomic reduction and then proceed with percutaneous intramedullary fixation of these two metacarpals first, using the INnate™ Intramedullary Nail. INnate was chosen to facilitate dynamic healing with a goal of immediate full-arc range of motion to prevent the severe stiffness commonly seen with these complex injury patterns.

Sternal wire or suture cerclages can be a powerful tool for obtaining as well as maintaining reduction of long oblique or spiral fracture patterns. Fixing the middle and ring fingers first allowed restoration of the length of this patient's hand and facilitated subsequent closed reduction and percutaneous restoration of his digital curve using the INnate system with his index and small fingers. The patient's thumb was a difficult fracture for a retrograde INnate alone so Dr. Wilson chose to augment stability with isthmic purchase using a retrograde INnate device in combination with an antegrade InFrame™ device. This allowed for axial and rotational stability, above and beyond what a single axial device would confer alone. This also allowed for increased intramedullary implant spread at the capacious thumb metacarpal's metaphyseal base.

Once the patient's hand was stabilized, Dr. Wilson moved to stabilize his wrist fracture(s) using the Acu-Loc® 2 system. Given the limited available proximal segment bone at the right thumb metacarpal base, Dr. Wilson elected to place a retrograde INnate and then interdigitate and antegrade InFrame to maximize axial, angular, and rotational stability, instead of a single implant.

Postoperative Care

The patient was followed for 12 weeks. He experienced immediate active, full-arc range of motion including thumb opposition and an observed full and complete return to normal motion before six weeks.

Discussion

Just like the INnate nail, the InFrame cannulated micro nail helps the reduction of the fracture. Once the construct was completed, it was found to be quite rigid and stable. The intramedullary approach to fracture reduction allows for immediate flexion and extension. The benefit of the nail being titanium is that it creates a very stable and rigid construct to maintain the reduced fracture. The second nail allows for additional rotational stability at the fracture site.

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Preoperative



Postoperative

