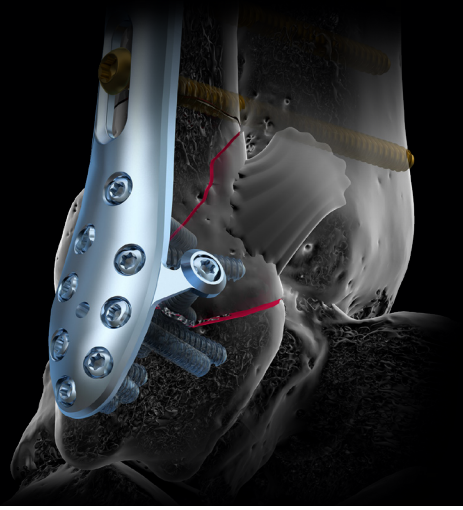
CASE STUDY



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Fixation of Fibula Fracture Dislocation Utilizing APTUS Fibula Plate with 2.8 mm Flap for Fixation of Wagstaffe Fragment

The Surgeon

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Dr. Marshall Gillette is a fellowship-trained orthopedic trauma surgeon, specializing in the prevention, diagnosis, and treatment of disorders of the bones, joints, ligaments, tendons, and muscles. Dr. Gillette earned his medical degree at the University of Texas Medical Branch in Galveston, Texas. He attended the University of Toledo Medical Center in Toledo, Ohio, where he completed a residency in orthopedic surgery. He also completed a fellowship in orthopedic trauma at the University of Mississippi Medical Center in Jackson, Mississippi.

Introduction

Ankle Fractures are one of the most commonly encountered orthopaedic injuries with varying levels of severity based on the amount of energy delivered, host bone quality and corresponding soft tissue damage. Fracture pattern is also quite variable with a multitude of fracture patterns and fragments possible, depending on the mechanism and position of the foot at the time of injury.

The Case

Patient Profile

A 49-year-old male was involved in a motorcycle collision traveling approximately 50 mph. He presented to our Emergency Department with ankle pain, deformity and inability to ambulate. He was diagnosed with a right ankle fracture dislocation by the ED staff physician. This was closed reduced in the emergency department. Patient received pre-operative x-rays as well as CT scan for surgical planning.

Imaging and Diagnosis

Initial x-rays show SER IV type ankle fracture dislocation without medial malleolus fracture. There is significant syndesmotic widening on the AP view of the ankle. Given the gross displacement and dislocation, it is presumed that the deltoid ligament is incompetent. On the lateral view, note the Wagstaffe fragment remains attached to the anterior lateral tibia denoting intact anterior inferior tibiofibular ligament. (Figure 1A)

CT scan of the ankle after emergency department reduction shows concentric tibiotalar joint. The Wagstaffe fragment is easily visualized on axial, coronal and sagittal CT scan cuts. (Figures 1B and 1C) A small posterior malleolus fracture is noted on the axial image.

Figure 1A


Figure 1B

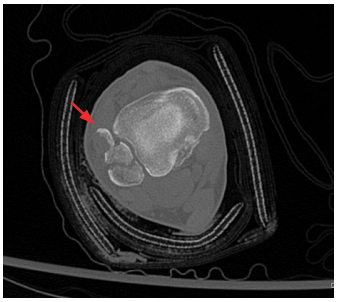
Figure 1C

Surgical Treatment

After successful closed reduction, the soft tissue envelope was amenable to early open operative fixation. A lateral approach was used to access the fracture. The oblique fibula fracture was first addressed with anatomic reduction and fixation with a single 2.8mm screw placed with lag technique. Two Kirschner wires were then used to provisionally hold the Wagstaffe fragment in anatomic position on the fibula. A fibula plate with integrated fragment-specific Wagstaffe flap was applied to secure the Wagstaffe fracture fragment and neutralize the lag screw.

The APTUS Fibula Plate with 2.8 mm Flap for Fixation of Wagstaffe Fragment successfully neutralized the distal fibular fracture and provided fixation of the independent Wagstaffe fragment. A dorsiflexion external rotation stress radiographs was then performed at the completion of the case, demonstrating a stable ankle joint without need for additional syndesmotic fixation or deltoid ligament repair. (Figure 2A and 2B)


Figure 2A


Figure 2B

Post-Operative Treatment

The patient was immobilized in a well padded AO splint in neutral dorsiflexion post-operatively. He was transitioned from splint to removable fracture boot for ROM when stitches removed and incision healed. Patient began weight bearing at 8 weeks, initially in a boot and gradually transitioned to a regular shoe. At nine months post-op follow up, patient is back to work full time and has no pain or instability.

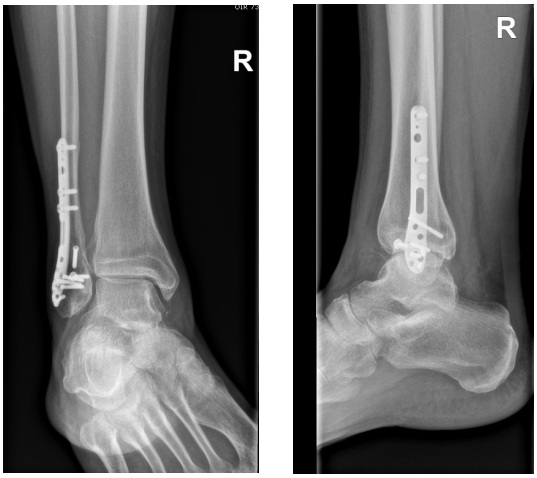

Figure 3A & 3B: 9 months post-op

Conclusion

Open reduction and stable fixation of the distal fibula and Wagstaffe fragment provided good functional results for this patient. There was no evidence of ankle instability throughout the postoperative course. Integration of the Wagstaffe fracture flap provided a stable ankle by taking advantage of the intact anterior inferior tibiofibular ligament without need for additional fixation, syndesmotic screws or an additional incision to address the deltoid ligament.