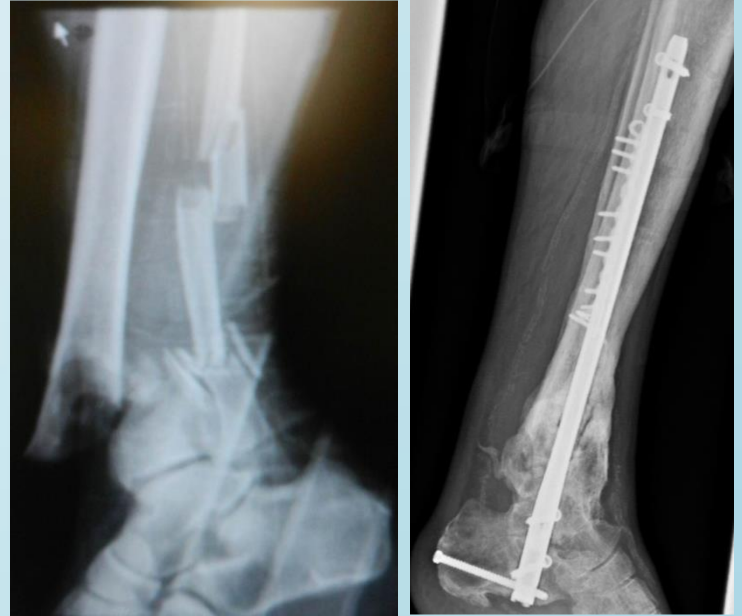
NEW MEXICO
BONE & JOINT INSTITUTE

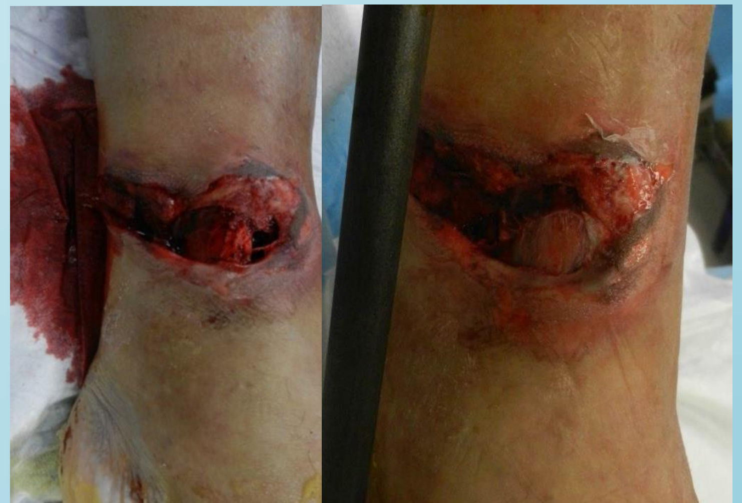
External Fixation Case Study

J. Joseph Anderson DPM FACFAS
New Mexico Bone and Joint Institute

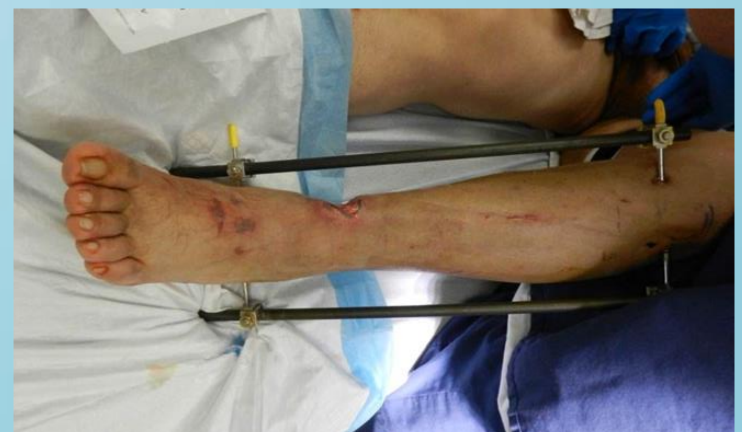
Case 000

A 65 year old, diabetic male with hypertension was admitted to emergency room after a 16 ft fall from a ladder in June, 2012. His left ankle was severely fractured with an open wound where some of his bone had protruded. The pieces of the tibia and fibula bones were both partially and completely fractured and the count of fragments reached above 50. There was a while after the fall, but before he was found, so the wound was left open. Initially, a uniplanar external fixator was attached for stabilization.

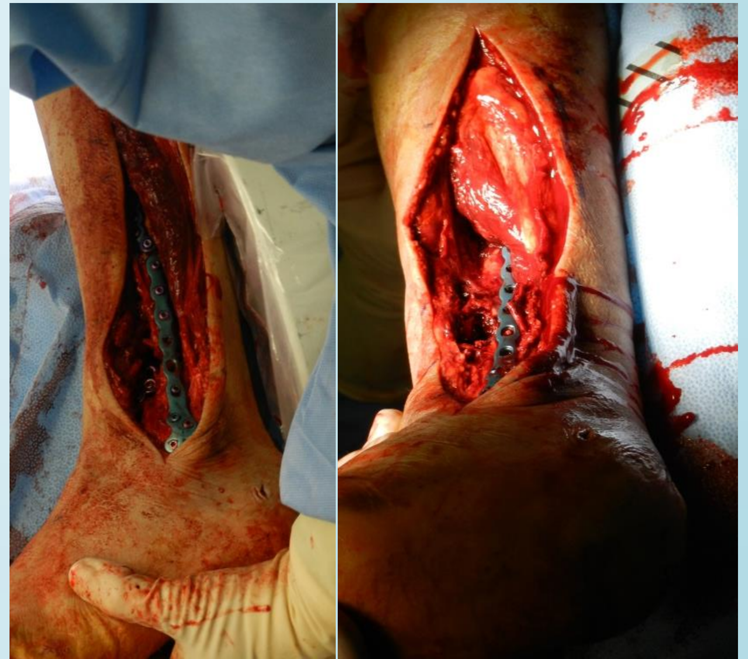


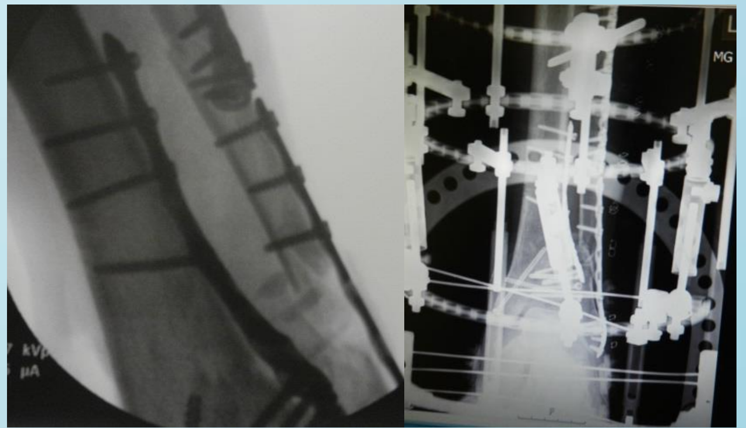


The severity of the wound and fracture had strong suggestion that the leg may need to be amputated. Limb salvage was going to be attempted and a multiplanar external fixator was going to be applied. Patient was admitted to surgery a week after initial stabilization to replace it with a long term external fixator.

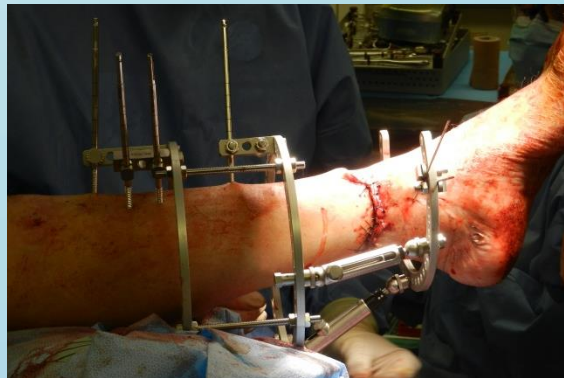


During surgery, the wound was aggressively debrided to the periosteum and deep subcutaneous and subfascial layers. The wound was approximately 15x12 cm and 2.5 cm deep. After debridement, the surgical area was re-prepped and draped and the uniplanar external fixator and the pins were removed.

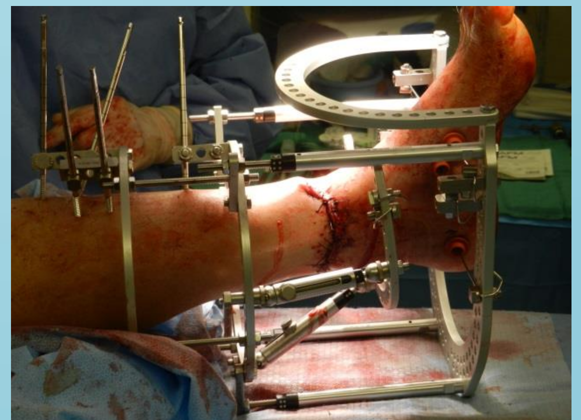




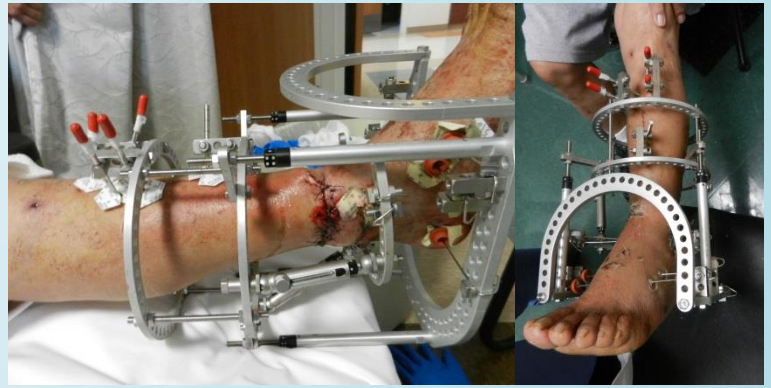
The fibula was pulled out to length and the pieces were reassembled and fixated. In between some of the fragments, NuCel was applied to assist in bone growth and healing. Many of the small fragments that were loose were flushed away out of the wound.



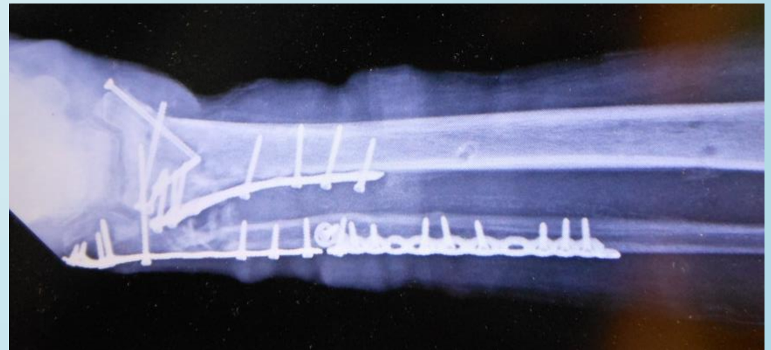
The patient was instructed to be completely non weight-bearing, elevate the leg and take prescriptions for pain as needed. Precautions were taken to minimize hospital or community acquired infections.

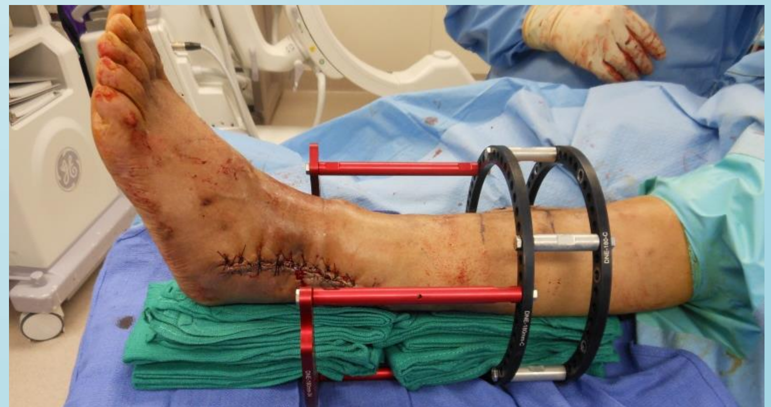


Two months post-operative, the patient received another surgery for some hardware removal and for repositioning of the external fixation and light debridement of the initial medial wound.

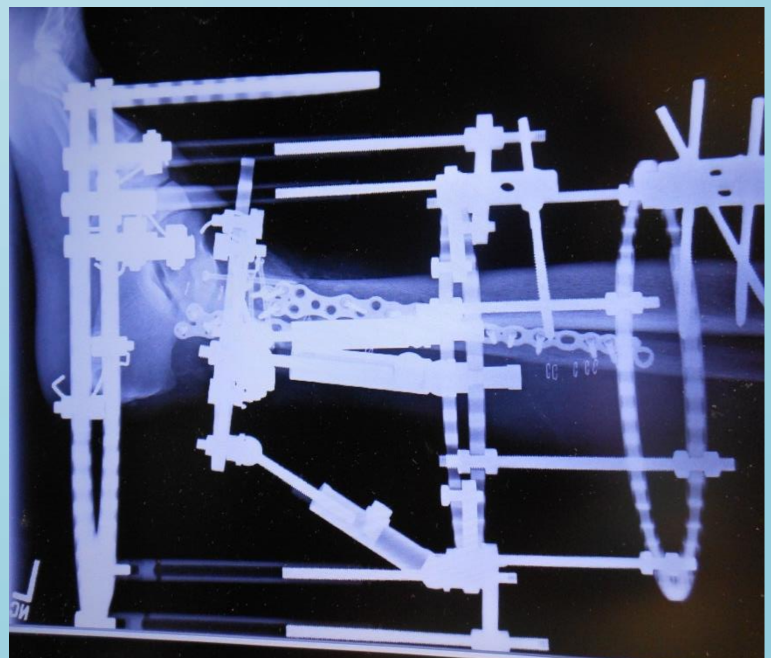


Four months post-operative, the patient underwent another surgery to remove the external fixation. It was believed that this would have been his last surgery and he would be on his way to return to normal daily activity.

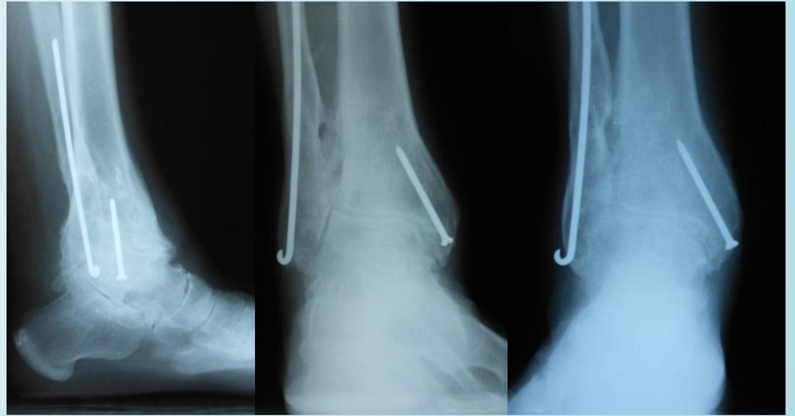




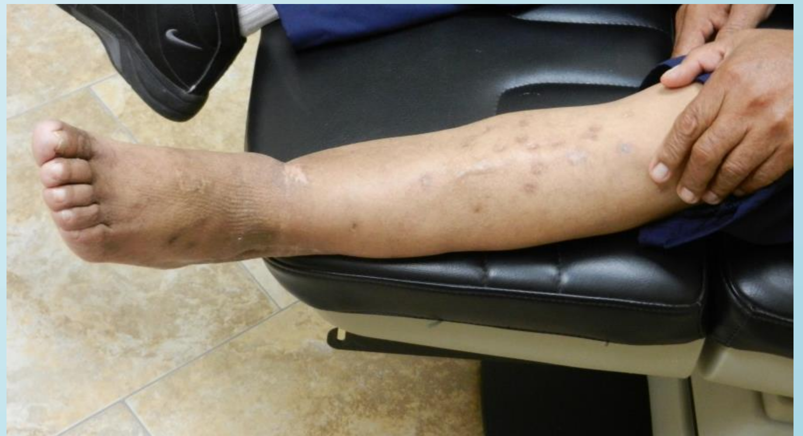
At eight months post-operative of the original surgery, the patient was to undergo another surgery for nonunion of the previous injury to his left tibia and fibula. All the hardware was removed from the tibia and fibula. The nonunion was isolated to the distal tibia where it was evaluated, debrided, retracted again and re-plated with another external fixator. His hardware had an internal malfunction, however, that needed to be removed at two months post-operative and another external fixator was applied.



After another four months, the hardware was removed due to the bone being unified and the initial wound being healed.



Throughout the year, the initial open wound as well as some of the surgical sites had difficulty healing . On multiple occasions, debridement and re-suturing were necessary. Several applications of Dermagraft were applied in clinic as well to assist in the wound healing process.



Currently, the patient has healed all wounds and bone. He is currently back to full daily activity and walked at least a mile every day without pain.