

# Compound Midshaft Tibia Fibula Fracture With Delayed Fixation in Africa

*Romain Onteniente, DPM*

*Timothy Graham, DPM*

*Mario Cala, DPM*

*Ayouba Gamal, MD*

*Thomas Merrill, DPM*

### INTRODUCTION

The Podiatry Overseas Association is a nonprofit medical mission that travels to several locations around the world including Africa. Lome is the capital city of the country Togo in western Africa. Togo gained its independence from France in 1960. Lome has a population of 1.5 million and is located on the coast of the Gulf of Guinea. It has been called “the pearl of West Africa” and “the Paris of West Africa”

The Podiatry Overseas Association evaluates patients and performs surgery in a small town about 2 hours away from Lome. Ayouba Gamal, MD, an orthopedic surgeon at a 140-bed hospital, selects the surgical patients and coordinates follow-up care. He sends a list of patient with various types of deformities and pathologies to prepare the team for what is to be expected during the trip. Approximately 2 weeks prior to the arrival of the team, the following case was brought to their attention.

### CASE PRESENTATION

A 42-year-old man had sustained a motorcycle accident, which lead to a midshaft open comminuted tibia fibula fracture in the left lower extremity. The patient presented to the emergency room in the Kpalime hospital approximately 12 hours after the accident. Due to the characteristics of the fracture as well as the clinical appearance, the doctors administered 1 gm of amoxicillin by mouth, applied a “cardboard” posterior splint, and implemented daily dressing changes. Due to the lack of materials and the poor prognosis of the fracture, the orthopedic department made the recommendation to amputate the left lower extremity after about 10 days. Because our team would be arriving soon, the department consulted Dr. Gamal.

Upon arrival of the team, a brief description of the patient was given although no clinical images were available. The patient was driven from the Kpalime hospital to the smaller city where the team was staying. The initial clinical pictures and radiographs are shown in Figures 1-3. The goal was to try to save the leg. There were palpable pulses distal

to the trauma, and the leg appeared to have decent blood flow. No vascular changes were noted to the extremity. Mild purulence was noted at the open site, but the tissues still appeared viable. There was some granulation tissue and very little necrosis.

The patient was taken to surgery that same afternoon and distal traction and realignment were applied (Figure 4). A multi-segment ring external fixator was used to maintain distal traction and alignment (Figure 5). A closed suction negative pressure wound vacuum was also applied (Figure 6). Over the next 3 months, various types of dressings were applied, but mostly wet to dry betadine. The fixator remained stable with only minor adjustments needed. No wire infections and no loss of wires were encountered (Figure 7). At 3 months postoperative, Dr. Gamal applied a split-thickness skin graft taken from the thigh (Figure 8).

The external fixator was removed at 6 months and the patient was placed in a cast. Dr. Gamal lost track of the patient when he stopped coming in for follow-up after the removal of the external fixator. After multiple attempts at contact, the patient returned almost exactly 1 year postoperative. Complete healing of the skin had occurred, and the patient was able to fully bear weight with no pain (Figures 9, 10).

### DISCUSSION

This is one example of the type of pathologies the team encounters during the Africa missions. The mortality rate is still high, the rate of amputation is more than 60% for open fractures, and the life expectancy is close to 50 years. This case could have had a worse outcome because per US standards, there was clear osteomyelitis. With a 3-week open comminuted tibia fibula shaft fracture with intramedullary canal exposure and purulence, osteomyelitis is expected. In such a case, the risk of applying an external fixator was high for systemic infection, and the prognosis for bone healing was poor due to the overall loss of structure and loss of bone fragments. The patient was fortunate to have such capable medical staff at the Kpalime hospital, with a well-trained and

experienced orthopedic doctor who followed the protocol and maintained the wound care treatments using mainly donated materials.

Another limitation that is clear in Africa is the lack of patient's compliance, although sometimes the noncompliance is not a choice as the main type of transportation is by feet through rugged trails. More than 400,000 people are dependent on 1 public hospital, which

has only 1 surgeon. The area covered by this population is wide and the lack of transportation forces people who need medical care to walk miles trying to reach help. There are many pathologies and congenital deformities that remain untreated due to lack of funding, lack of materials, and lack of follow-up.



Figure 1. Initial presentation of the patient to the team 3 weeks after the accident, note the cardboard splint.



Figure 2. Bone and soft tissue deficit 3 weeks after accident.

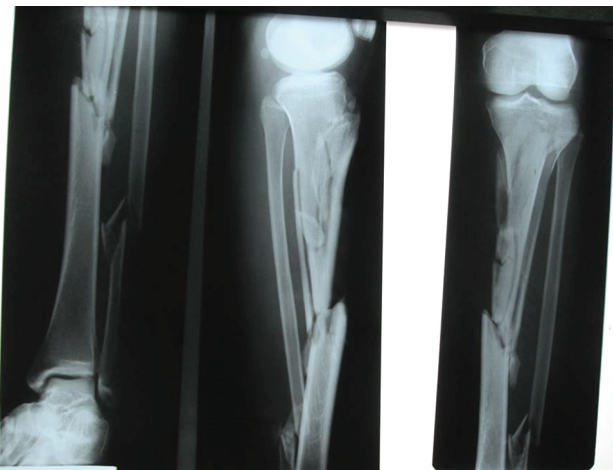


Figure 3. Midshaft comminuted and unstable tibia and fibula fractures 3 weeks after the accident.



Figure 4. Distal traction is applied and alignment corrected.

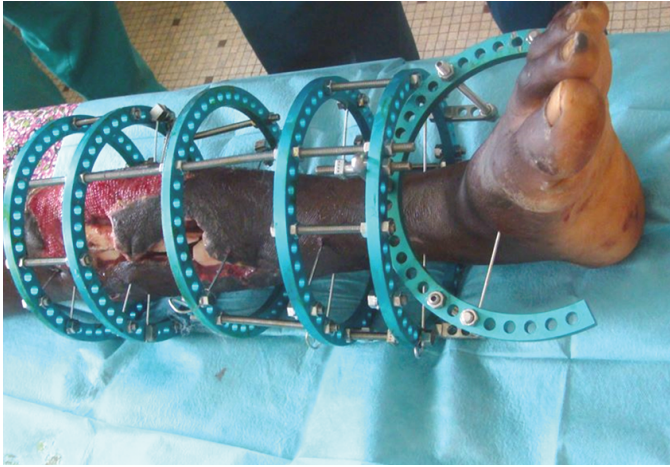


Figure 5. Ring external fixator with 5 rings and a half ring used along the tibia and fibula ending proximal to the ankle joint.



Figure 6. Negative pressure wound vacuum applied.

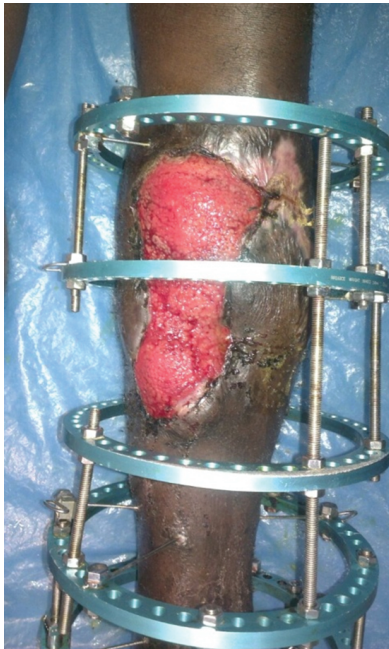


Figure 7. Three months postoperative with intact frame, no infection and good, healthy granulation tissue coverage.



Figure 8. Split-thickness skin grafts applied at 3 months postoperative.



Figure 9. One year clinical follow-up, the patient is fully weightbearing.

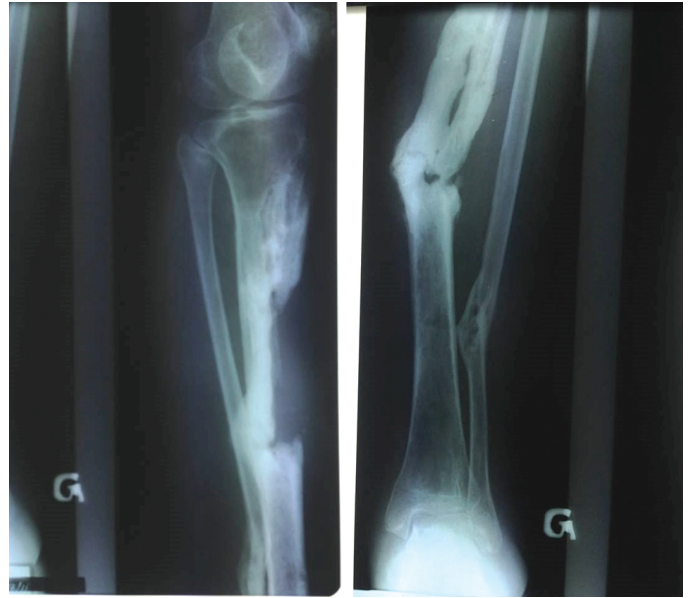


Figure 10. One year follow-up with slight valgus angulation with clinical union and no pain.