Management of an Open Displaced Tibiofibular Fracture in a 20-year-old Male Collegiate Soccer Player: A Case Report
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**Background:** A 20-year-old healthy male collegiate defensive soccer player was slide tackled by an opponent during an away conference competition. The Certified Athletic Trainer’s on-field evaluation concluded an open displaced fracture of the right lower leg. The wound was dressed with sterile gauze and immobilized by a vacuum splint and the athlete was referred to the Emergency Room via ambulance. Upon arrival at the hospital, the athlete remained in the vacuum splint without consultation for approximately 3.5 hours. **Differential Diagnosis:** Gustilo-Anderson Type III A Fracture, Transverse Fracture, Open Tibial Fracture. **Treatment:** X-Rays were obtained and a full evaluation both inside and outside of the operating room revealed two traumatic wounds in the posterior lateral aspect of the lower leg, resulting in a Gustilo-Anderson Type III A Open Fracture at the level of the junction between the middle and distal third of the tibia and fibula. The orthopedic surgeon’s plan was to irrigate and débride the wound and place an intramedullary rod through the tibia. Over the course of 10 days post-op the athlete developed many infections resulting in a total of five surgeries to irrigate and débride the wound. During his sixth surgery osteomyelitis was noted, and continued to develop despite the surgeon’s best efforts to control the infection. 11 weeks post initial injury x-rays indicated nonunion of the fracture; as well an extension of the osteomyelitis 6-7 cm proximally from the fracture site. The orthopedic surgeon decided that the patient would need to undergo a segmental tibial resection and an Ilizarov bone transfer. He also informed the patient of the seriousness of the infection, and that this surgery was the last option before amputation would be necessary. Over the next two weeks the procedure was performed and the patient was placed in a 6-ring Ilizarov frame. Approximately one month post bone transfer, x-rays revealed that the proximal osteotomy was widened 23 mm indicating excellent regeneration, as well as no evidence of infection. The athlete underwent rehabilitation with the University’s Athletic Training Staff over a 15-month time frame. The rehabilitation included pain control, range of motion and flexibility exercises of the foot ankle and lower leg, strengthening of the entire lower quarter, proprioception and functional exercises, as well as exercises focusing on cardiovascular endurance. The athlete developed contractures in his first and second toes because of the Ilizarov frame. Once the frame was removed his first and second metatarsals were treated with fusion and tenotomy which corrected his adaptive hammertoe deformity, The athlete was able to return to competitive play approximately 23 months post-injury with only discomfort in his great toe. **Uniqueness:** Due to the number of infections that were sustained, possibly because of delayed management, the athlete had to undergo 12 surgeries for an open tibiofibular fracture. Had the athlete been older and his growth plates been closed the Ilizarov bone transfer would have not been successful. This would have resulted in the athlete undergoing amputation of his right lower limb. **Conclusions:** It is essential for athletic trainers to have good knowledge of the on- and off-field management and classifications of open tibial fractures, as well as the expedient referral and management of these injuries. Common beliefs state that the classification of the open fracture can help define the antibiotic and management treatment. Also, early management of these injuries may help reduce the chance of infection. **Word Count:** 561