

Open Midfoot Fracture/Dislocation Wound Healed with a Fish Skin Graft

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Introduction

Open fractures with critical soft tissue disruption can cause difficulty in healing an injury and puts a patient at high risk for amputation. Treating open fractures is difficult because the patient is at a higher risk of infection and may require multiple operations. The ability to cover soft tissue increases the success rate of reconstruction. Different treatment modalities of closing the soft tissue defect includes skin grafting, muscle and free flap reconstruction, and wound vac closure.

Case Study

A 30 year old female presented to the emergency room following a car accident with an open fracture of her left foot. She had numerous fractures including a fragment off of the posterior malleolus of the tibia, fibula, navicular, medial and intermediate cuneiform along the the bases of the second and the third metatarsal bones. Initially, the patient was taken to the OR for debridement of the wound and reduction of the fractures. The fractures were reduced and pinned. The soft tissue defect was unfortunately unable to be closed primarily at the time. An application of a skin substitute was applied 3 days later for coverage of the soft tissue defect. The wound was a total of 39 sq cm. A second Fish Skin substitute was applied 11 weeks later for a total surface around of 21 sq cm. The patient was able to heal the wound in just under 4 months.

Case Study Continued



Figures A-D: Patient presented to ED with open fracture of the the left foot. Numerous fractures including a fragment of the posterior malleolus, fibula, navicular, medial and intermediate cuneiform, along with the base of the second and third metatarsals as seen on radiograph and CT scan.



Figures E-G: Post Reduction Films



Figures H-J: Wound progression during and after 2 applications of Fish Skin Substitute. Figure K: Final picture of patient healed in under 4 months.

Discussion

Open fractures pose a number of potential risks and complications, especially the risk of infection and potential for exposed hardware. In this case, we were unable to achieve primary soft tissue closure at the initial time of injury. The fractures were reduced and pinned in the OR to avoid placing hardware with an open wound. The patient underwent two applications of Fish Skin Substitute and was able to heal the wound in under 4 months without developing an infection. She was also able to heal her fractures in anatomic alignment. This is a successful case of a patient with an open fracture that was unable to be primarily closed at the time of injury due to critical soft tissue defect that was healed using Fish Skin Substitute.

References

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