

## Reconstruction of Large Tibia Defect with Vascularized Fibula Graft

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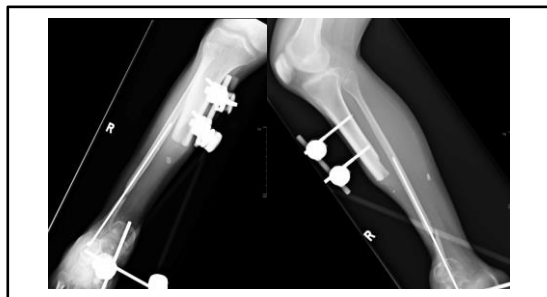
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### INTRODUCTION:

Reconstruction of large segmental bone defects has always been a challenge for orthopedic surgeons, especially when associated with a poor soft tissue envelope. When reconstructing defects larger than 6 cm, traditional grafting typically falls short, and more complex methods such as free vascularized bone grafting (VFG) is necessary.

### REPORT:

17 year old male had an MVA and sustained open fracture right tibia and fibula shaft (Gustilo Anderson grade 3B). He initially underwent wound debridement, external fixation of right tibia and rush rod fixation of right fibula. However, he later develops fracture related infection for which wound debridement and tibia resection was done. This leads to tibia bone defect of 14.5 cm, with remaining proximal tibia of 16.5cm and distal tibia of 2cm. Intraoperative tissue culture revealed *Pseudomonas aeruginosa* and he was given antibiotics for 6 weeks. After infection resolved, patient underwent osteo-cutaneous free fibula flap, allograft and plating of right tibia for management of the tibia and soft tissue defect. At 3 months post-surgery, patient was able to partial weight bear and has no pain over right leg. Wound healed well. Radiograph of right tibia and fibula showed bridging callus with plate and graft in situ.



**Figure 1:** Pre-VFG radiograph showed large tibia bone defect (14.5cm), with short distal tibia fragment (2cm).



**Figure 2:** Radiograph 3 months post-surgery showed bridging callus.

### CONCLUSION:

Severe, open fractures of the extremities often result in large bone and soft tissue defects following adequate debridement. When reconstructing bone defects greater than 6 cm such as in our case, the VFG is a reliable method, due to its predictable vascular pedicle, long cylindrical shape, tendency to hypertrophy, and resistance to infection. This graft can be transferred solely or as composite graft to reconstruct both bone and soft tissue defect. Many surgeons have reported significant bone union in an average of four to six months.

### REFERENCES:

Toros and Ozaksar, *Injury Int. J. Care Injured* 52 (2021), pg 2926–2934.