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A review of forty-five open tibial fractures covered with free flaps. Analysis of complications, microbiology and prognostic factors

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Objectives: Treatment of open fractures is complex and controversial. The purpose of the present study is to add evidence to the management of open tibial fractures, where tissue loss necessitates cover with a free flap. We identified factors that increase the risk of amputation, infection, non-union and flap loss. We analyzed the organisms cultured from infected fractures to optimize antibiotic prophylaxis.

Intervention: We reviewed patient records and databases for type of trauma, use of tobacco, time to soft tissue cover, infection, microbiology, amputations, and union of fracture. Follow-up was a minimum of one year.

Main Outcome Measurements: Primary outcome was infection, sensitivity pattern, amputation, flap failure and time to union of the fracture.

Results: We analyzed results from 45 patients. When soft tissue cover was delayed beyond 7 days, infection rate increased from 27% to 60%. High-energy trauma patients had a higher risk of amputation, infection, flap failure and non-union. Smokers had a higher risk of non-union and flap failure. The bacteria found were often resistant to cefuroxime, aminoglycosides or amoxicillin, but sensitive to Vancomycin or Meropenem.

Conclusion: Flap cover within one week is essential for successful outcome. We suggest antibiotic prophylaxis with Vancomycin and Meropenem until the wound is covered in these rare and complex injuries.



Open ankle fracture. Acute soft tissue closure and bone substitution, using a fascio-myo-cutan fibula graft.



Open distal tibia fracture (GA3B) treated with a free (LD) flap and acute shortening over a nail.

After healing and consolidation of the fracture, the patient underwent secondary lengthening with an intramedullary lengthening device.