

## A Case Report: Successful Bone Transport For Infected Tibial Nonunion With Ilizarov External Fixator

Muhammad Firdaus A, Fitri, Abdul Muttalib AW, Suhana SB, Richford J  
 Department of Orthopaedic, Hospital Segamat, Johor, 85000, Malaysia.

### INTRODUCTION:

Treatment of infected tibial nonunion presents significant challenge for orthopedic surgeons despite major advancements in fixation, soft tissue management, and antibiotic therapy. Management includes thorough debridement, stabilization of the fracture, and reconstruction of the bone defect. Thus, this is a case report of 3cm tibial lengthening using bone transport technique using Ilizarov ring fixator.

### MATERIALS & METHODS:

Case report

Mr MF, a 20-year-old Malay gentleman, with no known medical illness, non smoker, alleged motor vehicle accident (motorbike vs car) on 19<sup>th</sup> April 2015 and sustained open comminuted fracture distal third right tibia-Gustilo IIIA. The initial wound debridement and external fixation was done on same day of accident to manage the wound and soft tissue. Three month post trauma, the wound is well healed but the fracture still not uniting and only minimal callus formation present. Hence, we proceed with internal fixation by using lock plate at the right tibia.

Unfortunately 5 month after the tibial plating, noted seropurulent discharge coming out from operation site. Blood investigation shows leucocytes at 11,400/L, ESR at 2 mm/hr, and CRP at 0.99 mg/L. The x-ray show only minimal callus with loosening of screws. Diagnosis of osteomyelitis established, and the patient was operated for right tibia debridement, removal of implant, sequestrectomy, bone resection, and Ilizarov external fixation.



Figure 1: Xray right tibia of Mr MF, during Ilizarov fixation and the result after bone transport.

3 cm bone fragment was resected with oscillating saw at the distal tibial site, up to the presumed healthy area during the operation. Two weeks later, osteotomy at the proximal

tibia done and the lengthening and bone transport begin. The bone and tissue cultures grows *Methicilin Resistant Staphylococcus Aureus(MRSA)*. Patient was treated with oral Rifampicin and Fusidic Acid for six weeks duration. Three month after the procedure, check xray shows bridging callus, and minimal gap before docking site. Hence, we did iliac bone grafting. Seven month later, the progress is convincing. Xray showing complete consolidation at osteogenesis site, and a lot of bridging callus seen at the docking site. Ilizarov fixator removed, and changed to Patela Tendon Bearing(PTB) cast. Patient allowed for partial weight bearing. Two years after the accident, on latest clinic follow up the wound healed very well and xray shows right tibia completely united. Patient able to walk on full weight bearing, with no limb length discrepancy.

### DISCUSSIONS:

Limb lengthening using bone transport technique with Ilizarov has been suggested as the option in filling bone defects. It was chosen for this case after a thorough discussion with the patient as the most appropriate option that meets the primary treatment objective. The patient was young, cooperative, and has good family support. The patient's age is of an importance in the adjustment of the distraction rate to avoid complications such as premature consolidation or exceeding the capacity of ingrowth of the vascular supply. Moreover, the patient was given comprehensive education, which is essential due to having the apparatus placed for prolonged periods of time and the need for regular follow-up and monitoring.

### CONCLUSION:

While Ilizarov technique is considered as a minimally invasive procedure, its association with complications is relatively common. The management of this case was directed to achieve equal length of both limbs to restore the normal function. Although this case was particularly complicated, limb length was restored successfully.