

**Diagnosis and Long-Term Outcomes of Posttraumatic Lower Limb Osteomyelitis**

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**Purpose:** Posttraumatic osteomyelitis (PTOM) is an uncommon but potentially devastating complication of trauma. The aim of our study was to describe the demographics, treatment strategies, and long-term outcomes of patients presenting with PTOM.

**Methods:** All consecutive patients presenting to a Level-I trauma center with a confirmed diagnosis of PTOM of the tibia or femur were retrospectively identified, with a minimum follow-up of 5 years. Patients younger than 18 years and patients presenting without a history of trauma were excluded from further analysis. Treatment was individualized according to the patient needs and the preferences of the operating surgeon. Outcomes were assessed according pain levels and return to function. Limb function was assessed according to the Lower Extremity Functional Index (LEFI), and quality of life with the EQ-5D-3L [EuroQol-5 Dimensions, 3-Levels].

**Results:** 71 patients (59 male, average age 46 years) were included. PTOM involved the tibia in 45 patients and the femur in 26 patients. 18 patients originally sustained an open fracture. The average time from injury to presentation was 23.6 months (median, 12 months; range, 3-84 months). Patients were followed for an average of 86 months (80 months; 60-186 months) requiring on average 2.8 surgical procedures (2 procedures ; 1-12 procedures) and 2.3 readmissions (2 readmissions; 0-10 readmissions). Treatment of PTOM included removal of metalwork, radical soft-tissue and bone debridement as required, and administration of local and / or systemic antibiotics. The reamer-irrigator-aspirator (RIA) technique was utilized in 31 cases. 51 patients received local antibiotics via a cement nail (24), spacer (16), beads (6), or a combination of techniques (5). 20 patients required soft-tissue coverage including a free flap (10), pedicled flap (4), skin graft alone (1), or combination of techniques (5). Patients received, on average, 13.8 days (14 days; 0-47 days) of intravenous and 38.5 days (28 days; 0-365 days) of oral antibiotics. 44% of patients were left with a moderately / severely impaired limb, with 8 patients requiring an amputation (above knee in 1 patient). Recurrence of disease occurred in 16 patients. Both the use of RIA and delivery of local antibiotics were associated with significantly improved outcomes ( $P < 0.01$  and  $P < 0.05$ , respectively). LEFI and EQ-5D-3L scores were significantly lower compared to the general population.

**Conclusion:** PTOM remains a significant cause of morbidity following fracture fixation, carrying devastating long-term effects to both the limb function and quality of life. Aggressive debridement and use of local antibiotic agents may improve patient outcomes.