

Two-Stage Orthoplastic Debridement of Type IIIB Open Tibial Shaft Fractures Is Protective of Acute Compartment Syndrome

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Purpose: Type IIIB open diaphyseal tibial fractures are severe injuries with potentially devastating outcomes owing to the paucity of soft-tissue cover. The literature on whether open tibial shaft fractures constitute a higher risk for acute compartment syndrome (ACS) remains inconclusive, with the general consensus being that closed fractures represent a higher rate. We aimed to delineate the rate of ACS in Gustilo-Anderson type IIIB open tibia fractures, as part of a 2-stage orthoplastic approach.

Methods: This was a retrospective consecutive cohort study of 98 consecutive patients with a Gustilo-Anderson type IIIB open diaphyseal tibia fracture (OTA/AO 42) treated between May 2014 and January 2018, who underwent standardized 2-stage orthoplastic reconstruction. Stage 1 was a thorough orthoplastic debridement with fascial release of involved compartment. Stage 2 consisted of a single sitting fix and flap. The primary outcome measure was rate of ACS requiring fasciotomy. All patients were followed up for a minimum of 1 year for sequelae of missed compartment syndrome.

Results: Median age was 44.1 years (interquartile range [IQR] 37) with a median follow up of 1.9 years (IQR 0.7). There were 63 males to 35 females, with 42 left-sided injuries and the remaining 56-right sided. For the primary outcome, there were a total of 0 (0/98) patients who developed clinical ACS requiring fasciotomy. For secondary outcomes, 0 patients (0/98) developed early sequelae of compartment syndrome. Zero (0/98) patients developed late sequelae of compartment syndrome. Deep infection rate was 8.2%.

Conclusion: Open type IIIB tibia shaft fractures undergoing adequate orthoplastic 2-stage debridement do not seem to confer an increased risk of ACS, and in the appropriate set up, the procedure appears to be protective.