

Clinical Outcome Predictors Following Open Tibia Fractures in Latin America: A Secondary Analysis

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Purpose: Open tibia fractures remain a significant health-care issue worldwide, including Latin America. Previous work in this region demonstrated that the severity of fracture correlated significantly with health-related quality of life (HRQoL). This study sought to evaluate factors, including injury severity, delayed treatment, and method of fracture stabilization that were associated with decreased HRQoL scores following open tibia fractures in Latin America.

Methods: 16 trauma centers in 7 Latin American countries enrolled patients (aged ≥ 18 years) with isolated AO/OTA type 42 open tibial diaphyseal fractures between 2018-2022. Demographic and medical history, injury characteristics, radiographs, management, and a 12-Item Short Form Health Survey (SF-12) were collected at enrollment, and 6, 12, 26, and 52 weeks postoperatively. A secondary analysis was performed to examine the modified Radiographic Union Scale for Tibial Fractures (mRUST) scores, complications, and return to work following injury.

Results: 288 patients completed the initial enrollment data and follow-up through 1 year (68.1% response rate). The mRUST score was a significant predictor of the SF-12 Physical Component Summary (PCS) score (estimate: 1.2, 95% confidence interval [CI] 0.83-1.56), with the 1-year post-injury mean score being 14.9 ± 2.3 , demonstrating that fracture healing correlated significantly with improved HRQoL outcomes. Additionally, 58.0% of patients returned to work at 6 months, and the majority (82.2%) returned to work at 1-year post-injury, with Gustilo-Anderson (GA) Type I, II, and IIIA fractures showing the highest rates of healing. The mean mRUST score at 1 year did not attain a score reflecting union for GA Type IIIB and Type IIIC fractures. The greater the severity of fracture type, the higher the rates of nonunion and other complications. The most frequent complications reported were nonunion (6.9%), reoperation (6.3%), superficial infection (5.9%), and deep infection (3.5%).

Conclusion: These results provide insights into factors affecting clinical outcomes following open tibia fractures in Latin America. Fracture healing correlated significantly with improved PCS scores, with the average mRUST scores approaching healing at 6 months and achieving full healing at 1 year for GA Type I, II, and IIIA fractures.