

Determinants of Functional Outcomes Following Ankle Fracture*Megan Audet, BA; Chang-Yeon Kim, MD; Heather A. Vallier, MD**MetroHealth System, Cleveland, Ohio, USA*

Purpose: The purpose of this study was to determine factors, including injury patterns, social factors, demographic variables, and treatment course, that may be associated with poor functional outcomes after ankle fracture.

Methods: 781 patients treated for ankle fractures over 4 years were studied to determine what patient variables (age, gender, body mass index [BMI], medical comorbidities), social factors (alcohol, smoking, drug use), injury factors (presence of dislocation, open fractures, pattern), and sequelae affect functional outcomes. Functional outcomes included Foot Function Index (FFI) and Short Musculoskeletal Function Assessment (SMFA) questionnaires. Higher scores indicate worse outcomes.

Results: 378 men and 405 women with mean age 41 and 48 years ($P < 0.0001$), were studied after mean 90.2 months. Women had worse SMFA Daily Activity (33.6 vs 25.6, $P < 0.05$) and SMFA Bothersome scores (32 vs 24.5, $P < 0.05$). BMI was associated with worse FFI ($B = 0.207$, $P = 0.007$), and BMI >40 was a threshold for worse FFI (4.4 vs 3.2, $P = 0.04$). Alcohol and drug use were significant predictors of worse outcomes: alcohol with worse SMFA Emotion (40.7 vs 30.2, $P = 0.007$), SMFA Mobility (46.7 vs 35.8, $P = 0.015$), SMFA Dysfunction (33.5 vs 26.0, $P = 0.03$), and SMFA Bothersome scores (33.4 vs 24.2, $P = 0.016$) and recreational drug use with worse FFI (4.9 vs 3.3, $P = 0.02$) and SMFA ($P < 0.05$). Fracture pattern, associated dislocations, and open fractures did not have association with outcomes. Complications (wound infections, malunions, nonunions) occurred in 8.2%, 1.3%, and 3.4% of patients, respectively, and were associated with worse FFI (4.8 vs 3.1, $P = 0.001$), SMFA Daily Activity (39.1 vs 27.3, $P = 0.03$), and SMFA Dysfunction (36.9 vs 27.4, $P = 0.03$), although posttraumatic arthritis did not affect functional outcomes.

Conclusion: Morbid obesity, female sex, and alcohol or recreational drug use were each independently associated with worse FFI scores and SMFA scores after ankle fractures. Complications were also associated with worse scores. In comparison, fracture pattern, dislocations, open fractures, and posttraumatic arthritis did not affect functional outcomes after mean 7.5-year follow-up.