

Effects of Obesity on Complications and Functional Outcomes After Fixation of Torsional Ankle Injuries: A Matched Cohort Study

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Purpose: Obesity is a growing public health concern in developed countries. While diabetes mellitus is associated with obesity and is a risk factor for infection and other complications following ankle fracture, effects of obesity on outcomes after ankle fracture remains less clear. The purpose of this study was to determine effect of obesity on complications, secondary operations, and functional outcomes after torsional ankle fracture.

Methods: 985 adult patients treated surgically for a torsional ankle injury (OTA 44B, 44C) between 2003 and 2015 were reviewed. Demographic information, comorbidities, injury characteristics, complications, and secondary procedures were recorded. Obese patients were identified (body mass index [BMI] >30), and patients without obesity were selected from the same population as controls, matched for age, sex, race, diabetes, and fracture pattern (44B, 44C). Patient-reported outcomes, as measured by the Foot Function Index (FFI) and Short Musculoskeletal Function Assessment (SMFA), were obtained after a minimum of 12 months.

Results: 465 patients had BMI >30. After matching, 632 patients (316 obese [mean BMI, 36.7] and 316 non-obese controls [mean BMI, 25.5]) with mean age 44.6 years (range, 18-94 years) were analyzed. Each group was 52.5% female, and 6.6% of patients in each group had diabetes. 75.6% of fractures in each group were 44B, and 24.4% were 44C. Non-obese patients were more likely to be tobacco users (63.3% vs 40.2%, $P < 0.001$). Obese patients trended toward sustaining more dislocations (41.8% vs 35.4%, $P = 0.10$), with no differences in frequency of open fracture (15% vs 14%). A trend toward more obese patients requiring syndesmotic fixation (25.9% vs 20.6%) was observed ($P = 0.11$). 30% of obese patients had at least 1 complication versus 23.4% of controls ($P = 0.059$), with a trend for more wound healing problems (4.7% vs 2.2%, $P = 0.08$). Total FFI scores were higher (worse) among obese patients (35.2 vs 26.9, $P = 0.008$); subcategory scores for disability and activity limitation were also higher ($P < 0.01$) with a similar trend for the pain subcategory (36.4 vs 29.6, $P = 0.062$). Obesity was associated with worse SMFA bothersome (31.0 vs 23.6, $P = 0.018$) and mobility scores (41.8 vs 32.5, $P = 0.008$) and trend for worse dysfunction scores (29.7 vs 24.7, $P = 0.06$).

Conclusion: Obesity is associated with worse functional outcomes after ankle fracture. Contributions of baseline limitations to these poor scores in obese patients remain unclear. Injury characteristics were similar between obese and non-obese patients, although obese patients may be more prone to dislocation due to large BMI. Overall, there was a trend for obese patients to experience more complications and wound healing issues, although rates of secondary operations were no different.