

Racial Disparities Seen in Outcomes After Operatively Treated Lower Extremity Fractures

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Purpose: Racial and ethnic differences are known to affect care delivery and patient outcomes throughout many medical fields. While these disparities have been established in elective procedures where bias exists as to when and on whom surgery will be performed, only recently has literature shown that race does not affect short-term outcomes in orthopaedic trauma. At this time, however, whether race affects function in the long term after fracture has not been examined. The purpose of this study is to compare how race affects function at 3, 6, and 12 months postsurgery for following lower extremity fractures.

Methods: At a single institution, 447 operatively treated patients for a lower extremity fracture (207 tibial plateau, 51 tibial shaft, and 189 rotational ankle fractures) were prospectively followed for 1 year and included in this study. Race was stratified into four groups: Caucasian, African American, Hispanic origin, and other. Insurance information was collected and recorded at initial presentation. Long-term outcomes were evaluated using the Short Musculoskeletal Function Assessment (SMFA), pain scores, and physical examination at 3 months, 6 months, and 1 year. Univariate analysis was performed using χ^2 for dichotomous variables and analysis of variance (ANOVA) when comparing means between multiple groups, respectively. Multivariate logistic regression analysis was performed with the dependent variable being SMFA at 1 year and independent variables being age, sex, race, insurance type, Charlson Comorbidity Index (CCI), open fracture, and high-velocity mechanism.

Results: There were 230 (53.5%) Caucasians, 76 (17.5%) African Americans, 53 (12.3%) Hispanics, and 71 (16.5%) patients from other minorities in our study population. No differences between cohorts existed with respect to age, gender, body mass index (BMI), comorbidities, insurance status, or smoking history. When examining injury characteristics, minorities (African American, Hispanics, etc) were more likely to be involved in high-velocity mechanisms and tended to have a greater percentage of open fractures. Although there were no differences in the rate of wound complications and reoperations, long-term functional outcomes were worse in minorities, both in pain scores at 6 months and functional outcome scores at 6 and 12 months. Multivariate analysis revealed that only African American and Hispanic race continued to be independent predictors of worse functional outcomes at 12 months ($P \leq 0.01$, $\beta = 13.79$, 95% CI 6.294 to 21.285; $P = 0.03$, $\beta = 8.67$, 95% CI 0.894 to 16.440). No other demographic or injury characteristics had an effect on outcome scores.

Conclusion: Racial minorities have poorer long-term function following fractures of the lower extremity. While minorities were involved in more high-velocity accidents, this was not an independent predictor of worse outcomes. These ethnic disparities may result from multifactorial socioeconomic factors, including socioeconomic status and education levels that were not controlled for in our study. Orthopaedic trauma surgeons should therefore be

aware of these health-care disparities between ethnicities and look for early interventions to improve their recovery.

Table 1

	Caucasian	African American	Hispanic	Other	p value
# of patients (n=430)	230 (53.5%)	76 (17.7%)	53 (12.3%)	71 (16.5%)	
Patient Characteristics					
Age (yr)	47.3	43.4	44.3	45.8	0.25
Male	51.7%	47.4%	58.5%	50.7%	0.67
BMI (kg/m ²)	24.1	25.7	21.9	20.73	0.09
Medicaid	11.4%	19.0%	17.9%	13.6%	0.43
Medicare	13.0%	1.7%	20.5%	5.1%	0.01
Private Insurance	72.3%	78.0%	64.1%	79.7%	0.3
Worker's Comp	5.8%	7.9%	5.3%	3.6%	0.78
CCI	1	0.74	0.9	1.07	0.52
Smoking	27.5%	27.6%	22.6%	21.1%	0.67
Open Fracture	4.5%	11.3%	10.3%	6.5%	0.37
High Velocity Injuries	48.2%	66.0%	61.5%	67.4%	0.05
Outcomes					
3 Month SMFA	32.4	39.4	38.5	36.3	0.08
6 Month SMFA	16.2	28.6	31.7	24.8	<0.01
12 Month SMFA	11.9	19.9	20.5	20.6	<0.01
3 Month Pain	2.7	3.2	3.0	2.7	0.32
6 Month Pain	2.7	3.8	3.2	3.3	<0.01
12 Month Pain	2.9	4.4	2.6	3.2	0.06
Wound Complications	3.9%	5.3%	3.8%	4.2%	0.19
Reoperations	7.8%	15.8%	11.3%	9.9%	0.10

POSTER ABSTRACTS