

## Open Ankle Fractures in the Elderly: Predisposing Factors and the Associated Mortality

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**Introduction/Purpose:** Previous studies raised awareness of high mortality associated with open ankle fractures in elderly patients. Mortality among this patient population has been reported about 23-27% during the first year postoperatively. The purpose of this study was 1) to investigate the association between patient factors and occurrence of open ankle fractures and 2) to quantify the risk of mortality associated with open ankle fractures.

**Methods:** This is a retrospective cohort study of 1,045 patients 65 years and older, with ankle fractures, who were operated between 2010 and 2020. Background medical data included patient age, gender, language, race, fracture type and comorbidities. Case-control approach and logistic regression analysis were used to identify risk factors for open fractures. Propensity score matching and survival analysis were used to measure the hazard of mortality with ankle fractures.

**Results:** There were 128 (12.2%) patients with open ankle fractures in this cohort. Patients with open ankle fractures higher odds of belonging to the age group of 70 to 79 years (OR=1.7, p=0.03) and 80 to 89 years (OR=1.8, p=0.04), having a diagnosis of hypertension (OR=2, p=0.006) and chronic kidney disease (OR=2.9, p=0.005), and smoking (OR=1.7, p=0.049). Open ankle fractures were associated with higher risk of mortality (HR=1.7, p=0.03). Other variables related to mortality in these patients were ischemic heart disease (HR=1.9, p=0.009), chronic kidney disease (HR=1.99, p=0.02), peripheral vascular disease (HR=1.8, p=0.03) and diabetes (HR=2.1, p=0.006).

**Conclusion:** This study identifies older patients with comorbidities as having higher risk of open, compared to closed ankle fracture. Open ankle fractures are associated with higher mortality in this population, possibly indicating the need for control of comorbidities, reduction of fall risk and barrier protection as means of primary prevention.

