Predictors of early complications following surgical treatment of geriatric ankle fracture
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Introduction/Purpose: Factors predicting complications after surgical treatment of geriatric ankle fractures include presence of various comorbidities such as diabetes, chronic renal disease. However, beyond the binary definition of presence or absence, further specific information of these comorbidities such as their chronicity, severity and/or perioperative laboratories have not been studied as risk factors for postoperative complications. The purpose of this study is to investigate the association between the measurements of comorbidities and complications within the first 30 days following surgical treatment of geriatric ankle fracture.

Methods: A retrospective cohort study. From 2000 to 2015, we collected patient demographics, comorbidities-related data including laboratory values and complications within 30 days following open reduction and internal fixation of low energy ankle fractures in patients older than 65 years. Multiple logistic regression analysis was performed to determine factors affecting minor (superficial wound infection, delayed wound healing, urinary tract infection, pneumonia), major complications (deep wound infection, loss of fixation, deep venous thrombosis, organ/space failure).

Results: In total, 1,358 patients were included for analysis. The average age was 70.54 years (SD, 7.40). There were 895 (66%) females and 463 (34%) males. Baseline glucose concentrations >200 mg/dL (p < 0.001) and the mean 48 hour postoperative serum glucose concentrations >150 mg/dL (p < 0.001), history of taking wound compromising medications (p = 0.003) were significantly associated with minor complications. Preoperative glycated hemoglobin (HbA1c) >6.5% (p < 0.001), estimated glomerular filtration rate (eGFR) <45 mL/min/1.73 m2 (p < 0.001), dependent functional status and presence of two or comorbidities (p < 0.001) were statistically associated with major complications.

Conclusion: Poor glycemic control in the perioperative period, wound-compromising medications were associated with increased rates of minor complications, whereas poor chronic glycemic control (HbA1c), decreased renal function and vulnerability with multiple comorbid conditions were associated with major complications.

Perioperative blood glucose management may prevent minor complications, whereas and mean serum glucose concentrations of 150 mg/dL and higher during this time period.