Geriatric Distal Femur Fracture: 1 in 3 Chance of Death or Nonunion Surgery at 1 Year
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Background/Purpose: Fractures of the distal femur occur commonly in elderly patients after low-energy trauma. The purpose of our study was to investigate rates of mortality and nonunion following open reduction and internal fixation (ORIF) of low-energy distal femur fractures in a geriatric population. In addition, we sought to quantify the length of inpatient hospitalization and discharge disposition to better understand the impact of this injury on the health-care system.

Methods: After obtaining IRB approval we retrospectively reviewed patients aged 60 and above who sustained a low-energy distal femur fracture (AO/OTA 33) treated with ORIF using laterally based locked plating at three affiliated institutions from 2004 through 2014. Primary outcomes included death, symptomatic nonunion, and reoperation to promote union. Age-adjusted Charlson Comorbidity Index (CCI) was calculated based on comorbidities documented in the electronic medical record. Length of stay was calculated and discharge disposition was recorded.

Results: 176 patients were included in the final analysis. Mortality: 30-day, 90-day, and 1-year mortality were 6% (11 patients), 11% (20 patients), and 25% (44 patients) respectively. Significant predictors of 1-year mortality included increased age (82 ± 9 vs 76 ± 9, P <0.001), increased CCI (4.5 ± 2.5 vs 3.3 ± 2.1, P <0.02), and increased age-adjusted CCI (7.2 ± 2.3 vs 5.4 ± 2.2, P <0.001). Nonunion: In 99 patients alive and with 1-year follow-up there were 24 symptomatic nonunions identified (24%); 21 were treated with reoperation, either with revision ORIF or conversion to distal femoral replacement. Age (71 ± 8 vs 75 ± 8, P >0.05), CCI (2.7 ± 2.1 vs 3.7 ± 2.3, P >0.05), and age-adjusted CCI (5.5 ± 2.4 vs 5.9 ± 2.4, P >0.05) were not significant predictors of nonunion. Development of surgical site infection was associated with a sixfold increase in development of nonunion. Length of Stay/Disposition: The postoperative length of hospital stay averaged 8.1 days (SD 6.6 days). Additionally, 154 patients (87%) were discharged to a skilled nursing facility (SNF).

Conclusion: The low-energy geriatric distal femur fracture occurs in a frail, elderly population and is associated with significant mortality and risk for nonunion. In our series, 65 patients (36%) underwent reoperation for nonunion or died within 1 year of fracture. Increased age and comorbidities are associated with death at 1 year, but not nonunion. Development of surgical site infection is a significant risk factor for nonunion. Additionally, with the increasing emphasis on providing cost-effective health care, the financial burden associated with long inpatient hospitalizations and postacute SNF placement in the vast majority of patients should be acknowledged.