Worse Functional Mobility Is Associated with Increased Mortality After Distal Femur Fractures

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Purpose: Distal femur fractures are associated with high mortality rates given the impairment on mobility postoperatively. Previous literature evaluating morbidity and mortality after distal femur fractures does not account for the impact of overall functional mobility. Thus, the goal of this study was to determine the combined 2-year mortality and evaluate whether early functional mobility predicts postoperative mortality after operative fixation of a distal femur fracture.

Methods: Retrospective review of all distal femur fractures at a Level I trauma center from 2013-2022 was performed. The Activity Measure for Post-Acute Care score (AMPAC) was determined by physical therapists. The first and final inpatient postoperative AMPAC was categorized into groups: 6, 7-10, and >11. Pre-injury and 90-day postoperative ambulatory status was scored as independent (0) or dependent on a cane/crutch (1), walker (2), or wheelchair (3). Patients with <90-day follow-up were excluded. Chi-squared and Fisher exact tests were used to compare groups and binary-logistic regression was performed to determine predictors of mortality.

Results: Overall, 336 patients were included and combined 2-year mortality was 11.6%. Mortality was higher in patients who were older (70.2 vs 56.9 years, P<0.001), had higher Charlson Comorbidity Index (CCI) (5.13 vs 1.94, P<0.001), and whose mechanism of injury was a ground level fall (79.5% vs 53.7%, P = 0.035). Surgical factors associated with mortality included longer time to surgery (1.92 vs 1.27 days, P = 0.034) and operative time (3.31 vs 2.54 h, P = 0.032). Mortality rates were similar across ISS, periprosthetic versus native fractures, and postoperative infection. Rate of venous thromboembolism was significantly higher in non-survivors (18.2% vs 2.4%, P<0.001). Functional mobility factors associated with mortality included patients who were not independently ambulatory pre-injury (47.2% vs 72.7%, P = 0.003), worse final (10.6 vs 13.0, P = 0.009) and less improvement (2.00 vs 3.22, P = 0.05) in AMPAC, and continued use of ambulatory aids at 90 days (P = 0.026). Higher CCI (odds ratio [OR] 1.4, P = 0.002), pre-injury ambulatory status requiring a cane/crutch (OR 4.3, P = 0.033), venous thromboembolism (OR 14.8, P = 0.003), and lower final AMPAC (OR 0.15, P = 0.029) were independently predictive of mortality.

Conclusion: Combined 2-year mortality rate was 11.6% and higher CCI, dependent pre-injury ambulatory status, worse postoperative functional mobility, and venous thromboembolism predicted mortality following operative fixation of distal femur fractures. Continued focus on these fractures is needed to improve upon the high mortality rates.