

Immediate Weightbearing for Distal Femur Fractures Fixed with a Lateral Locking Plate Leads to Decreased Short-Term Complications Without Increased Failure Rates

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Purpose: Distal femur fractures are challenging injuries to treat. Historically, after operative fixation, 1 to 3 months of non- or partial weightbearing is prescribed. Allowing immediate weightbearing, particularly in elderly patients, is desirable due to the well-known benefits of early mobilization. This study aims to compare the clinical and radiographic outcomes of full versus modified weightbearing of distal femur fractures treated with lateral locked plating.

Methods: Data were retrospectively analyzed for all patients who underwent lateral locked plate fixation for an acute distal femur fracture at 1 of 4 area hospitals between October 2011 and April 2022. All surgeries were performed by a fellowship-trained orthopaedic trauma surgeon. AO/OTA Class 33-A, B, C and periprosthetic fractures with well-fixed components were included. Patient demographics, comorbidities, weightbearing status, 30-day complications (readmission, return to operating room, myocardial infarction, pulmonary embolism, deep vein thrombosis, cerebrovascular accident, surgical site infection, pneumonia, mortality), and 1-year mortality were recorded. Hardware displacement, fracture displacement, implant failure, malunion, nonunion, and time to union were assessed for all patients with an adverse event, 3-month event-free follow-up, or follow-up to fracture union. Statistical analysis was performed using heteroscedastic t-tests and chi-squared or Fisher's exact tests. Binary logistic regression and multiple linear regression were used to determine the relationship between covariates and radiographic and clinical outcome measures.

Results: 124 patients met inclusion criteria. Immediate weightbearing was permitted in 76 patients (61.3%) (weightbearing as tolerated [WBAT]). The WBAT group was older (83.2 ± 10.5 vs 68.9 ± 15.8 years, $P < 0.001$) and had a lower body mass index (28.1 ± 6.4 vs 30.8 ± 7.9 , $P = 0.016$) than the restricted weightbearing group (RWB). There were more peri-implant fractures in the WBAT group (64.4% vs 41.6%, $P = 0.013$). All open fractures were in the RWB group (12.5% vs 0%, $P = 0.003$). Intra-articular fractures were significantly more likely to be RWB (55.2% vs 20.0%, $P < 0.001$). The incidence of any complication within 30 days was lower in the WBAT group (7.9% vs 25.0%, $P = 0.008$) but there was no difference in the types of complications encountered. There was no difference between RWB and WBAT for 30-day (6.3% vs 2.6%, $P = 0.374$) or 1-year mortality (18.9% vs 25.5%, 0.468), hardware displacement, implant failure, fracture displacement, malunion, nonunion, or time to union (10.5 ± 3.2 vs 11.3 ± 3.5 weeks, 0.381). Binary logistic regression found that age at time of fracture (odds ratio [OR] = 0.885, $P = 0.049$) and Charlson Comorbidity Index (CCI) (OR 0.478, $P = 0.012$) significantly predicted mortality at 1 year. Patients who were WBAT (OR 0.207, $P = 0.041$) and those with lower body mass index (OR 1.095, $P = 0.040$) had significantly lower 30-day complications while CCI (OR 1.547, $p = 0.023$) predicted increased rates of complications.

Conclusion: Immediate weightbearing after fixation of distal femur fractures with a lateral locking plate is associated with fewer early complications than restricted weightbearing. Weightbearing status, increasing body mass index, and higher CCI were independent predictors of 30-day complications. Immediate weightbearing was not associated with an increase in fixation failure.

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