

Does Age Affect Functional Recovery Following Surgical Management of Tibial Plateau Fractures?

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Purpose: Tibial plateau fractures occur most frequently in middle-aged adults, with younger patients typically being men with high-energy mechanisms and older patients typically being females with lower-energy mechanisms. The purpose of this study is to examine how age affects functional recovery following surgical management of tibial plateau fractures.

Methods: 163 tibial plateau fractures (from 161 patients) operated on by two surgeons at one academic medical center were included in this study. Patients were available for an average of 16 months of follow-up. Clinical and functional outcomes at the latest follow-up were retrospectively assessed via prospectively collected Short Musculoskeletal Function Assessment (SMFA) scores, pain levels, range of motion, and radiographic assessments. Linear regression analysis was used to analyze the effect of age (independent variable) on time to healing, postoperative range of motion, and SMFA scores (dependent variables). Logistic regression was used to assess the predictive capacity of age for complications and reoperations. Multivariate linear regression, controlling for preinjury SMFA scores, was then used to confirm all significant univariate SMFA findings.

Results: At the latest follow-up, age was not a significant predictor of time to healing ($P = 0.154$), range of motion (flexion $P = 0.110$, extension $P = 0.064$), visual analog scale (VAS) pain score ($P = 0.061$), complications ($P = 0.635$), or reoperations ($P = 0.354$). Age was found to be a significant predictor of increased (poorer functional outcome) total SMFA scores at the latest follow-up ($\beta = 0.28$, 95% confidence interval [CI] = 0.081-0.474, $P = 0.006$). However, while a significant predictor, age was only able to explain 5% of the variability in total SMFA scores. The strongest correlation within the individual SMFA subdomains was with the activities of daily living (ADL) subdomain ($\beta = 0.46$, 95% CI = 0.179-0.739, $P = 0.001$), where for every 10 years in age, SMFA ADL subdomain scores increased by 4.6 points (mean score at latest follow-up = 27.75 ± 26.52). Both the functional and bothersome subdomains were also significantly elevated at the latest follow-up. Only the emotional subdomain showed no significant association with age. Multivariate analysis confirmed the significance of all univariate findings.

Conclusion: While age is not a significant predictor of time to healing, postoperative range of motion, VAS pain scores, complications, or reoperations, it is associated with poorer clinical assessment scores that cannot be explained by preinjury functional status. While mild overall, the deficit appears to disproportionately affect patients' activities of daily living. Regardless of the impact, there is no evidence that older patients' injuries affect their emotional well-being any differently than younger patients with similar injuries.