Spinal Anesthesia Improves Early Functional Scores and Pain Levels Following Surgical Treatment of Tibial Plateau Fractures

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Purpose: Data suggest that the use of regional anesthesia improves early clinical outcomes and pain levels in surgically managed ankle and wrist fractures. This study seeks to determine the effect of spinal anesthesia (SA) on clinical outcomes when compared to general anesthesia (GA) in operatively managed tibial plateau fractures.

Methods: Over 8 years, all operative tibial plateau fractures treated by two surgeons at a single institution were prospectively followed. Overall, 113 patients with a minimum of 12 months follow-up were identified for this study. Of these, 30 received SA and 83 received GA in a nonrandomized fashion. All patients were treated using a similar operative protocol. All patients were kept non–weight bearing postoperatively for a minimum of 10 weeks and were prescribed a similar physiotherapy regimen. Clinical outcomes were compared at 3 months, 6 months, and the latest follow-up (average 19.3 months). These outcomes include Short Musculoskeletal Function Assessment (SMFA) scores, pain levels, complications, and reoperations. Student *t*-tests and χ^2 tests were used to assess crude differences between the groups. Multivariate linear regression was used to confirm univariate differences in SMFA and pain scores by controlling for gender, age, race, Charlson comorbidity index (CCI), injury energy level, Workers' Compensation status, and residual plateau depression following operative management.

Results: Gender distribution was nonuniform, with men comprising 57% of GA and 35% of SA ($P = 0.040$). Additionally, race distribution was nonuniform with whites comprising 76% of SA but only 34% of GA ($P < 0.01$). High-velocity (HV) injuries were more likely to have occurred in those receiving GA (65%) versus those receiving SA (38%). There was one case of compartment syndrome in the GA group. No other differences were significant. Using univariate analysis, SMFA scores were significantly improved at 6 months in SA versus GA patients, which was confirmed using multivariate analysis ($\beta = -1.14$, 95% confidence interval [CI] = –2.06 to –0.23, $P = 0.015$). Additionally, using univariate analysis, pain scores were significantly lower in SA versus GA at 6 months ($P = 0.004$) and at the latest follow-up ($P = 0.012$). After controlling for group differences, however, pain scores were found to be lower in SA versus GA at 3 months ($\beta = -0.16$, 95% CI = –0.24 to 2.02, $P = 0.048$), but not at 6 months or the latest follow-up. Multivariate analysis revealed that the odds of a patient who received GA reporting a higher pain score at 3 months was 3.1 times (95% CI, 1.06 to 9.26, $P = 0.039$) that of patients receiving SA. At the latest follow-up, Caucasian race ($P = 0.02$) was the only predictor of improved outcome while a history of smoking ($P = 0.041$), advanced age ($P = 0.003$), and higher CCI ($P = 0.015$) were predictors of worse outcome. Anesthesia type was not a significant predictor of complications or reoperations.

Conclusion: In patients who undergo surgical management of a tibial plateau fracture, the use of spinal anesthesia is associated with improved functional scores and decreased pain levels up to 6 months postoperatively.

- The FDA has not cleared this drug and/or medical device for the use described in this presentation (i.e., the drug or medical device is being discussed for an "off label" use). For full information, refer to page 600.