

### **Arthrofibrosis Following Operatively Treated Tibial Plateau Fractures: Predictors and Outcomes**

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**Purpose:** This study was performed to assess what patient and injury factors may predict knee stiffness following tibial plateau fractures.

**Methods:** Over 11 years, all operative tibial plateau fractures, treated by one of three surgeons at a single institution, were prospectively followed. Arthrofibrosis was defined as arc of motion 90° or less. Outcomes were evaluated using the Short Musculoskeletal Function Assessment (SMFA) and visual analog scale for pain scores at short-term and latest follow-up. Student t tests were used for continuous variables. Chi-squared analysis was used for categorical variables. Multiple linear regression analysis was performed for knee range of motion (ROM) and binary logistic regression analysis was performed for lysis of adhesions.

**Results:** 275 patients, with 279 tibial plateau fractures, were included in our analysis. At 3-month follow-up, 27.4% of operatively managed patients had a knee ROM of 90° or less. By long-term follow-up (mean = 18 months), 7.2% of operatively managed patients had had a knee ROM of 90° or less. At 3-month follow-up, multiple linear regression demonstrated open fractures ( $P = 0.037$ ) and application of a knee spanning external fixator ( $P = 0.041$ ) to be independent predictors of arthrofibrosis. At long-term follow-up, independent predictors of arthrofibrosis were the application of a knee spanning external fixator ( $P = 0.002$ ), non-Caucasian ethnicity ( $P = 0.009$ ), and developing a postoperative deep infection ( $P = 0.005$ ). Functional outcomes were worse in patients who had knee stiffness compared to those who did not, at each time point. Lysis of adhesions with a manipulation under anesthesia for arthrofibrosis was performed in 3.3% of patients. There was a significant improvement in knee ROM by a mean of 55.14° ( $P < 0.001$ ) and functional outcomes ( $P = 0.006$ ) when this procedure was performed for arthrofibrosis.

**Conclusion:** Predictors for the development of arthrofibrosis, following operative management of tibial plateau fractures, include application of a knee spanning external fixator, open fractures, non-Caucasian race, and the development of a postoperative deep infection. Lysis of adhesions was a reliable treatment for arthrofibrosis. Additionally, patients with arthrofibrosis have worse functional outcomes following tibial plateau fracture surgery. With the knowledge of predictors for the development of arthrofibrosis, orthopaedic traumatologists may be able counsel patients and provide early interventions aimed at improving these patients' long-term outcomes.