Does Loss of Knee Extension Following Operative Treatment of Tibial Plateau Fractures Affect Outcome?

Abhishek Ganta, MD*; Amaya M. Contractor, BS; Kenneth A. Egol, MD; Sanjit R. Konda, MD; Philipp Leucht, MD; Steven Rivero, MD; Nirmal C. Tejwani, MD; Maxwell Trudeau*

Purpose: The purpose of this study was to determine the effect that development of a knee extension contracture has on outcomes following surgical repair of tibial plateau fractures.

Methods: Patients in whom varying degrees of loss of terminal knee extension developed following surgical repair of a displaced tibial plateau fracture were identified. Patients were grouped into three cohorts: (1) full extension (FE), (2) 5° to 10° of extension contracture (Mild, ME), and (3) greater than 10° of extension contracture (Severe, SE) at 6 months postoperatively. Patients with contracture were matched to patients who regained full extension based on age and Schatzker classification. Outcomes were evaluated, including patient-reported pain levels, short musculoskeletal function assessment (SMFA) scores, complication rates, and reoperation rates.

Results: The cohorts consisted of three groups of 30 patients (14 Schatzker II, 5 Schatzker IV, 3 Schatzker V, and 8 Schatzker VI). The average age of patients among the three groups was 55.9 ± 15.6 years, and there were no differences in gender, body mass index (BMI), or Charlson Comorbidity Index (CCI). The average knee extension contracture for ME was 5°, and the average for SE was 12.7°. A total of 18 patients had external fixation prior to definitive fixation; seven (23%) were in the FE cohort and 11 (37%) were in the ME and SE cohorts ($p = 0.443$). Patients who experienced extension contracture had poorer SMFA scores at 6 months, and those in the severe cohort group had the poorest SMFA scores (112.6) compared to those with full extension (77.7) ($p<0.001$). Patients with an extension contracture experienced more pain at 6 months ($p<0.001$). A fracture-related infection (FRI) was more likely to develop in patients with extension contractures ($p = 0.002$). Finally, patients with extension contracture had higher rates of reoperation, with 36.7% of the ME cohort and 40% of the SE cohort undergoing reoperation compared to 13.3% in the FE cohort ($p<0.001$).

Conclusion: Patients in whom an extension contracture developed following repair of a tibial plateau fracture experienced worse outcomes, higher rates of complications, increased pain, and poorer function at long-term follow up compared to those who achieved full knee extension.