

Pace of Recovery of Physical Function After Tibial Plateau Fractures

Patrick Kellam, MD; Graham J. DeKeyser, MD; Thomas F. Higgins, MD; David L. Rothberg, MD; Justin Haller, MD; Lucas S. Marchand, MD
University of Utah, Salt Lake City, UT, United States

Purpose: While the rate of complication and arthritis after open reduction and internal fixation of tibial plateau fractures has been studied, the time frame for the recovery of physical function (PF) is not well understood. Previous studies have evaluated outcomes to 12 months, but there is a paucity of data on the rate of progress. The objective of this study was to evaluate the progression of intermediate-term outcomes using PROMIS (Patient-Reported Outcomes Measurement Information System) PF scores.

Methods: A retrospective review of all patients over a 5-year period with isolated, operatively treated tibial plateau fractures were identified by CPT codes (27535 and 27536). PROMIS PF scores were collected for all patients with unicondylar (uni) and bicondylar (bi) injuries. Scores were then divided based on follow-up: immediately postoperative, 6 weeks, 3 months, 6 months, 12 months, and 24 months after surgery. Scores were averaged and 95% confidence intervals (CIs) were calculated to create a recovery curve. Student t tests were performed across follow-up periods for the same injury pattern as well as comparing between similar time points for the two types of injury (uni vs bi).

Results: There were 184 patients (96 uni and 88 bi) with PROMIS scores immediately postoperative, 154 patients (80 uni and 74 bi) at 6 weeks, 180 (90 uni and 90 bi) at 12 weeks, 123 (60 uni and 63 bi) at 24 weeks, 93 (45 uni and 48 bi) at 1 year, and 36 (16 uni and 20 bi) at 2 years. For unicondylar plateaus, there was no change between immediately postoperative and 6 weeks (28 vs 28, $P = 0.65$). There was a rapid increase in PF from 6 weeks to 3 months (28 vs 37, $P < 0.001$) and 3 months to 6 months (37 vs 43, $P < 0.001$). Then from 6 months to 1 year (43 vs 44, $P = 0.52$) and 1 year to 2 years (44 vs 46, $P = 0.35$) there was a subtle increase in PF. For bicondylar plateaus, there was a difference between each sequential time point under 1 year (27 vs 30, $P = 0.05$; 30 vs 34, $P < 0.001$; 34 vs 40, $P < 0.001$; 40 vs 44, $P = 0.04$), but then a very slight decline between 1 year and 2 years (44 vs 42, $P = 0.88$). When comparing unicondylar versus bicondylar injuries, no difference was found between PF scores at all times points except at 3 months ($P < 0.001$), where unis were doing better.

Conclusion: Interestingly, patients with a unicondylar plateau fracture continue to see improvements in PF up to 2 years postoperatively. Conversely, patients with bicondylar plateau fractures continue to see improvements until a year postoperatively, but show a slight decrease beyond that. This information can be very helpful for setting patient expectations postoperatively, which is something we do currently based on some mix of gestalt and anecdote.