

Arthroscopic-Assisted Percutaneous Fixation Achieved Superior Clinical and Patient-Reported Outcomes Compared to Open Reduction and Internal Fixation for Lateral Tibial Plateau Fractures

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Purpose: The purpose of this study was to compare clinical and patient-reported outcomes from Schatzker I to III tibial plateau fractures treated with open reduction (ORIF) or arthroscopic-assisted percutaneous fixation (AAPF).

Methods: Adult patients who underwent surgical fixation for a tibial plateau fracture from 2020 to 2023 were identified from a database in one healthcare system. Patients with Schatzker I to III fractures treated with ORIF or AAPF were included and contacted to complete the International Knee Documentation Committee (IKDC) survey at a minimum of 4 months postoperatively (range: 4.8 months–3.9 years; median: 1.9 years; no difference between AAPF and ORIF, $p = 0.23$). Exclusion criteria included knee dislocations, open fractures, and periprosthetic fractures. Differences between surgical groups were assessed using a Pearson's χ^2 test or Fisher's exact test for categorical variables and a Wilcoxon rank-sum test for continuous variables. A linear regression model was also used.

Results: In total, 64 patients met inclusion criteria (median age: 60 years, 78% female). Most patients had Schatzker II fractures (64%, $N = 41$). ORIF was performed in 37 (58%) patients and AAPF in 27 (42%). Baseline characteristics including age, sex, body mass index, ASA score, and fracture type did not differ between cohorts. The AAPF group had higher IKDC scores (81 vs 71, $p = 0.005$), better knee flexion (135° vs 130° , $p = 0.023$), and a shorter surgical time (35 minutes) compared to the ORIF group ($p = 0.001$). There was no difference in reoperations between the two groups ($p = 0.4$): eight hardware removals in ORIF versus four in AAPF, three manipulations under anesthesia for stiffness in ORIF versus one in AAPF, one chondroplasty in AAPF, and one conversion from AAPF to ORIF. Regression analysis found that positive predictors of higher IKDC scores are AAPF ($\beta = 16$, 95% CI: 5.6–26; $p = 0.003$) and longer follow up ($\beta = 5.2$, 95% CI: 0.06–10; $p = 0.047$).

Conclusion: Compared to ORIF, AAPF achieved superior patient-reported outcomes and knee flexion while requiring less surgical time.