

Patients with Anterior Impaction Tibial Plafond Injuries May Have Inferior Outcomes*David A. Bloom, BA; Matthew Patrick Sullivan, MD**SUNY Upstate, Syracuse, NY, United States*

Purpose: Recent literature has suggested an additional subtype of tibial plafond fracture, the “anterior impaction” (AI) injury. The purpose of this study was to compare the outcomes of patients with AI pilon fractures to those with non-AI pilon fractures.

Methods: Patients who underwent operative fixation of intra-articular distal tibia fractures over a 7-year period at an academic Level I trauma center were retrospectively reviewed. AI injuries were categorized based on previously published criteria, namely involvement of at least 10% of the anterior plafond with associated talar subluxation. Patients were reviewed on CT and radiographs. Kellgren-Lawrence (KL) grade was used to determine posttraumatic osteoarthritis (PTOA) grade at final follow up. χ^2 , t test, simple logistic regression, and multiple logistic regression were used; significance was set at $P < 0.05$.

Results: This study included 108 patients (26 female) for final analysis, 45 (41.8%) of whom had anterior impaction plafond fractures. Average age, body mass index (BMI), and follow-up were 42.4 ± 13.7 years, 29.3 ± 6.42 kg/m², and 422 ± 361 days, respectively. There were no statistically significant differences between groups with respect to patient age, sex, BMI, smoking status, fracture status (open vs closed), or follow-up duration between groups ($P > 0.05$ for all). Similarly, there were no statistically significant differences when comparing mechanisms of injury between groups; $P = 0.61$. There was no statistically significant difference between groups with respect to proportions of OTA 43-B/C fractures with 16 (36.6%) 43-Bs in the anterior crush cohort and 26 (41.3%) in the non-crush cohort; $P = 0.69$. 41 (91.1%) of the anterior crush fractures were staged with external fixators, a significantly higher proportion than their non-crush counterparts (38, 60.3%; $P < 0.001$). χ^2 test demonstrated that AI patients were more likely to undergo reoperation than their non-AI counterparts (31% vs 13%; $P = 0.028$). They were also more likely to undergo subsequent arthrodesis relative to non-AI injuries (13% vs 3%; $P = 0.047$). Similarly, these patients had worse PTOA (KL grade 3-4) at final follow up when compared to their non-AI plafond counterparts (89% vs 46%; $P < 0.001$).

Conclusion: AI pilon injuries have inferior outcomes (higher rates of reoperation, progression to arthrodesis, and worse PTOA) than those without these injuries.