

### **Total Knee Arthroplasty After Tibial Plateau Fracture Is Not Common and Occurs Early After the Injury**

*Matthew Hogue, MD; Nicholas Bedard, MD; David Demik, MD; John Callaghan, MD; J. Lawrence Marsh, MD; Michael Willey, MD  
University of Iowa, Iowa City, Iowa, USA*

**Purpose:** Total knee arthroplasty (TKA) is a common salvage operation after failed treatment of a tibial plateau fracture due to the development of posttraumatic osteoarthritis. The rates and timing of conversion to TKA after tibial plateau fracture has a limited number of reports in the literature. The purpose of this study was to utilize a large national database with longitudinal tracking capability to investigate the rate and timing at which patients with tibial plateau fractures are secondarily converted to TKA.

**Methods:** The PearlDiver Research Program was used to query the Humana administrative claims database from 2007 to the third quarter of 2015. Patients with tibial plateau fractures were identified using CPT codes and laterality modifiers. Patients were then followed over time to determine the frequency and timing of conversion to ipsilateral TKA.

**Results:** 4427 tibial plateau fractures were identified that underwent either closed or operative treatment of a tibial plateau fracture during the study period (2287 closed treatment, 2140 operative). There were 1579 males (35.7%) and 2848 females (64.3%), with 886 patients age <50 years (20.0%) and 3541 patients age >50 (80.0%). Overall, 81 of 4427 (1.8%) of these patients had subsequent ipsilateral TKA after a tibial plateau fracture. The rate of conversion to TKA after an operatively treated plateau fracture was 2.1% (44 of 2140), while the rate of progression to TKA after a nonoperatively treated fracture was 1.6% (37 of 2287). These rates are not significantly different ( $P = 0.28$ ). Approximately half (41 of 81, 50.6%) of all patients progressing to TKA had done so by 12 months, 61 of 81 (75.3%) by 24 months, and >90% had progressed to TKA by 48 months. When comparing operatively versus nonoperatively treated fractures that went on to TKA by 24 months, there were 88.6% (39 of 44) in the operative group and only 59.5% (22 of 37) in the nonoperative group ( $P = 0.002$ ). No patients less than 50 years of age at the time of fracture went on to TKA, and there were no differences in rates of subsequent conversion TKA between genders.

**Conclusion:** Failure of treatment resulting in conversion to TKA after tibial plateau fracture is uncommon. Most patients after either operative or nonoperative treatment of a tibial plateau fracture maintain their native joint at midrange follow-up. If progression to TKA occurs, it is typically within the first 2 years after initial management.