

Effect of Surgeon and Hospital Volume on Conversion to Total Knee Arthroplasty After Tibial Plateau Repair

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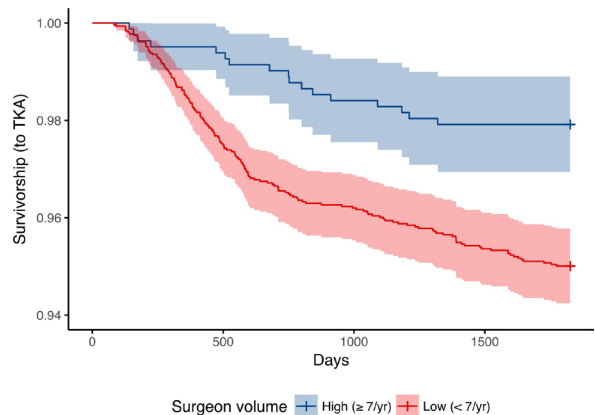
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Purpose: Some orthopaedic procedures exhibit volume-outcome relationships that suggest benefits associated with triage and treatment by higher volume surgeons and hospitals. The purpose of this study was to determine whether this association is present for open reduction and internal fixation (ORIF) of tibial plateau fractures with regard to the outcome of conversion to total knee arthroplasty (TKA).

Methods: The Florida State Inpatient Database was queried to identify patients who underwent ORIF of a tibial plateau fracture between 2006 and 2009. Hospital and surgeon volume were defined as average annual volume of tibial plateau ORIF procedures. The outcome of interest was any subsequent hospitalization for TKA within 5 years. Comparing rates of this outcome, cut-points were established to define high and low volume. Survival analysis, including Cox proportional hazards modeling, was used to estimate the effect of volume on rates of TKA, controlling for age, sex, race/ethnicity, insurance, open fracture, and comorbidities.

Results: In this cohort of 3921 patients, 172 patients (4.4%) underwent TKA within 5 years of ORIF of the tibial plateau. This included 5.0% of patients treated by low volume surgeons versus 2.1% treated by high volume surgeons, and 4.8% treated at low volume hospitals versus 2.0% treated at high volume hospitals. High volume surgeons and hospitals were defined by annual volumes greater than 7 and 29, respectively. After adjusting for patient factors and injury characteristics, treatment at a low volume hospital was associated with a larger hazard of conversion to TKA (hazard ratio [HR] = 2.05; 95% confidence interval [CI] = 1.11, 3.80). Treatment by a low volume surgeon was also associated with a larger hazard of conversion to TKA (HR = 2.17; 95% CI = 1.31, 3.59).

Conclusion: Tibial plateau ORIF exhibits a volume-outcome relationship such that patients treated by the highest volume surgeons and centers exhibit a lower rate of conversion to TKA. This finding suggests that the regionalization of care for these injuries may improve outcomes.



The FDA has stated that it is the responsibility of the physician to determine the FDA clearance status of each drug or medical device he or she wishes to use in clinical practice.