Early Periprosthetic Fracture Within 30 Days of Primary Total Knee Arthroplasty Is Associated With Increased Complications and Reoperation

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Background: Periprosthetic fracture (PPFx) following total knee arthroplasty (TKA) is a serious complication associated with substantial morbidity. Limited data exist regarding whether complications differ based on the timing of PPFx relative to the index procedure. This study aims to compare outcomes among patients sustaining PPFx within 30 days of primary TKA to those sustaining fractures at later time points.

Methods: Patients sustaining a PPFx following a primary TKA between 2010 and 2023 were identified using a large, national all-payer database. Patients were stratified by fracture timing relative to index TKA: ≤30 days, 31–90 days, and 91 days to 1-year postoperatively. Propensity score matching (1:1) resulted in cohorts of ≤30 vs 31–90 days (n=297 per group) and ≤30 vs 91 days–1 year (n=403 per group), matched on age, sex, Elixhauser Comorbidity Index, obesity, rheumatoid arthritis, smoking status, osteoporosis, and alcohol use disorder. Ninety-day medical complications and 2-year surgical outcomes were assessed using multivariate logistic regression.

Results: When compared to fractures occurring between 31–90 days postoperatively, fractures occurring ≤30 days demonstrated comparable outcomes. However, when compared to fractures occurring between 91 days and 1 year postoperatively, early fractures (≤30 days) were associated with increased 90-day complications, including periprosthetic joint infection (OR 6.67, $p<0.001$), deep vein thrombosis (OR 2.38, $p=0.023$), wound dehiscence (OR 5.56, $p<0.001$), and overall complications (OR 3.23, $p<0.001$). At 2 years, early fractures were also associated with higher rates of revision TKA (OR 1.47, $p=0.016$) and reoperation (OR 1.35, $p=0.037$).

Conclusion: PPFx occurring within 30 days of TKA are associated with significantly higher short-term medical complications as well as revision and reoperation rates when compared to fractures occurring beyond 90 days. These findings suggest that early postoperative fractures represent a particularly high-risk subset of patients who may benefit from heightened surveillance and targeted perioperative optimization strategies.