

## **Ten-Year Incidence and Possible Predictors of Conversion to Total Knee Arthroplasty Following Operative Fixation of Distal Femur Fractures: Analysis of 6,086 Patients**

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**Purpose:** Fractures of the distal femur may be associated with the development of posttraumatic arthritis. Little investigation has been undertaken regarding the rate of conversion to total knee arthroplasty (TKA) following treatment of distal femur fractures. The purpose of this study is to review a large database to calculate incidence and identify possible risk factors (injury, patient, subsequent surgery) associated with conversion to TKA following operative treatment of distal femur fractures.

**Methods:** All adult patients (>18 years) who underwent fixation of a distal femur fracture from 2007 to 2020 were identified using CPT codes (27511, 27513, 27514) within the PearlDiver database. Age, sex, body mass index, mechanism of injury, medical comorbidities, fracture characteristics, subsequent surgical procedures, time from index surgery to TKA, and 10-year incidence of conversion to TKA were recorded.

**Results:** A total of 6086 subjects who had undergone surgical fixation of a distal femur fracture were identified. 1464 (24%) were male. 10.2% of subjects were between 18 and 49 years, 26.7% were between the ages of 50 and 65, and 63.1% were over the age of 65. 9% of fractures were open. A total of 1651 secondary surgical procedures were documented: 735 underwent removal of implants, 97 underwent knee arthroscopy, 21 underwent open lysis of adhesions, 427 underwent debridement, 196 underwent revision fixation, and 175 underwent repair of nonunion. 132 subjects underwent TKA within 10 years, for an overall incidence of 2.17%, with 73.5% of TKAs occurring within 2 years. The rate of conversion to TKA was 0.8% in subjects 18 to 50 years of age, 3.7% in those age 50 to 65, and 1.7% in those over 65. When compared to subjects 18 to 50 years of age, age 50 to 65 years was a significant predictor of conversion to TKA ( $P < 0.001$ ). The rate of conversion was 1.66% for extra-articular fractures (CPT 27511), 2.29% for partial articular fractures (CPT 27514), and 2.25% for complete articular fractures (CPT 27513) ( $P = 0.25$ ). Subsequent removal of implants was predictive of conversion to TKA, with 5.8% of patients undergoing removal of implants eventually undergoing TKA compared to 1.7% in those who did not ( $P < 0.001$ ). No other injury (open/closed), patient (sex, body mass index, comorbidities), or surgical (subsequent surgery type) factors were predictive of conversion to TKA.

**Conclusion:** Our findings demonstrate that the 10-year incidence of conversion to TKA of a distal femur fracture is low (2.17%). The majority of patients undergoing conversion to TKA did so <2 years from index surgery. No injury, patient, or surgical factors were predictive of TKA other than age and implant removal, but that may have been part of the staging process for TKA. Technical factors certainly play a role (eg, quality of reduction, fixation construct), but cannot be analyzed in large database studies.