

Dual Plate Fixation of Distal Femur Periprosthetic Fractures

Nicholas A. Andring, MD; Shannon B. Kaupp, MD; Kaitlin B. Henry, BS; Kathryn B. Helmig, MD; Sharon B. Babcock, MD; Jason B. Halvorson, MD; Holly B. Pilson, MD; Eben A. Carroll, MD

Purpose: Dual implant fixation for distal femur periprosthetic fractures (DFPFs) is a growing area of interest given an increasing emphasis on early mobilization particularly in geriatric patients. Dual plate (DP) constructs can be applied in nearly all types of knee arthroplasty or other concurrent hardware. Our objective is to retrospectively observe the reoperation, alignment maintenance, return to weightbearing, and complication profile in one of the largest series of dual plating DFPFs compared to lateral distal femur locking plate (DFLP).

Methods: The electronic medical record was surveyed for operatively treated DFPF. Inclusion criteria was presence of a total knee arthroplasty (TKA) with distal femur fracture, age >50 years, use of DP or DFLP alone, and >6 months follow-up. Patient demographics, medical comorbidities, TKA type, Su classification, and presence of osteoporosis were compared. Outcomes between DP and DFLP were compared including reoperation rate, coronal alignment, weightbearing status postoperatively, range of motion, change in ambulatory status, and any other complications.

Results: 34 patients with DFLP and 38 with DP met inclusion criteria from 2014 to 2021. The DFLP group had an average age of 74.8 ± 7.3 years and had 18.2 ± 13.8 months follow-up. The DP cohort was on average 75.9 ± 11.3 years old with 19.8 ± 16.1 months follow-up. The groups were statistically similar regarding demographics, known osteoporosis, TKA type, and Su classification. There was no statistical difference in reoperation rate, which was 5% in the DP and 6% in the DFLP group. Coronal alignment at final follow-up between DFLP or DP was maintained. 87% of DFLP were non-weightbearing in the postoperative period compared to 9% in the DP. 73% patients in the DP group returned to baseline level of ambulation with regard to use and assistive device type compared to 38% in the DFLP group. There were no statistical differences in complication profile between groups.

Conclusion: DP constructs in DFPF demonstrated coronal alignment maintenance with a low reoperation rate even with immediate weightbearing when compared to DFLP. The likelihood of returning to baseline ambulatory status was greater in the DP group compared to the DFLP group. The current study represents one of the largest comparative case series demonstrating reliability of DP for DFPF regardless of TKA implant, fracture morphology, or weightbearing.