Revision Versus Repair of Periprosthetic Distal Femur Fractures

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INTRODUCTION: The purpose is to determine differences in outcomes between open reduction internal fixation (ORIF) and revision knee arthroplasty (rTKA) for patients with periprosthetic distal femur fractures.

METHODS:

A single center retrospective review from November 2013 to August 2023 was conducted. High-energy injuries were excluded. Su et al periprosthetic classification was used to classify fractures. Patients who underwent ORIF were deemed to have stable implants. Data collected included patient demographics, surgical details, and outcome data. Patients were divided into ORIF and rTKA groups. Cohorts were compared for significance using fisher's exact test and independent t tests. Multivariable analysis was used to evaluate the association of fracture type to covariates. RESULTS:

48 patients were identified. 23 patients (47.9%) were treated with ORIF and 25 (52.1%) were treated with rTKA for a loose femoral component. Classification of fractures were as follows: 31.3% Su I, 25% Su II, and 43.8% Su III. The majority (86.7%) of Su I were treated with ORIF, whereas the majority of Su III (68.0%) were treated with rTKA. 21.7% of ORIF were treated with intramedullary nail only, 60.8% with single plate and screws, 4.3% with dual plate and screws, and 13.0% with a plate and nail combination. Of revision arthroplasty patients, 56.0% had a distal femoral replacement in addition to rTKA. Patients who underwent rTKA were older on average than those who underwent ORIF (78.96 vs. 73.22, p = 0.032). There were no differences in hospital metrics between cohorts including: inpatient complications, length of hospitalization, operative time and blood loss, or readmission rates. Post-operatively, there were no differences in the rate of fracture-related or periprosthetic joint infection, all cause reoperation, time to weight-bearing allowance, knee range of motion, or mortality at one year. When controlling for covariates age, sex, fracture classification, BMI, CCI and ASA, there was a greater incidence of subsequent revision TKA among patients who were treated with revision TKA (12.0% vs. 8.7%, p = 0.041) than those treated with ORIF.

DISCUSSION AND CONCLUSION:

Revision TKA as treatment for periprosthetic distal femur fracture was associated with greater need for subsequent TKA revision compared to ORIF.