

Retrograde Nailing of Periprosthetic Distal Femur Fractures Can Cause Iatrogenic Flexion Instability in Cruciate-Retaining Total Knees

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Purpose: Retrograde intramedullary nailing (rIMN) is an effective treatment for supracondylar (AO/OTA 33A) periprosthetic distal femur fractures (PPDFF) in patients with compatible total knee arthroplasty (TKA) implants. In cruciate-retaining designs (CR-TKA), the posteriorly displaced starting point forced by the femoral component may cause iatrogenic posterior cruciate ligament (PCL) injury and subsequent flexion instability (FI). The purpose of this study was to investigate clinical outcomes in patients with PPDFF who undergo rIMN including subsequent revision and subjective and/or objective evidence of instability.

Methods: A retrospective query was performed for all patients with prior TKA who underwent rIMN for PPDFF treated at a single Level I trauma center. Patients were excluded if they had documented prior TKA instability, less than 3 months of follow up, or surgery was performed by an orthopaedic surgeon without trauma specialty training. Clinic notes and radiographs from preoperative to the final follow-up visit were reviewed. The primary outcome was rate of revision TKA. Secondary outcomes included subjective complaints, objective and radiographic findings suggestive of instability, radiographic alignment, union, and complications. Standard descriptive statistics were used to summarize the cohort.

Results: A total of 73 patients (61 females) was included. Average age was 73.8 ± 12.3 years, and median length of follow up was 294 days (IQR: 156, 411 days). Four (6.2%) patients underwent revision TKA, three with prior CR-TKA and one PS-TKA. All three CR-TKA knees were revised for instability. Revision TKAs performed were two polyethylene exchanges, one CR to total stabilized, and one PS-TKA to hinged TKA following femoral component loosening. Five (6.8%) patients reported symptoms and seven (9.6%) had positive physical exam findings suggestive of FI. Using the contact point ratio, lateral knee radiographs demonstrated that 22 (30.1%) patients had posterior tibial translation, suggesting a loose flexion gap seen in FI.

Conclusion: Our retrospective review suggests that iatrogenic FI caused by damage to the PCL is a potential complication following retrograde nailing of PPDFFs. Future studies are required to confirm these preliminary findings.