Total Knee Arthroplasty in Patients with Prior Anterior Cruciate Ligament Reconstruction: Soft Tissue Balancing Remains the Issue

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INTRODUCTION: Following anterior cruciate ligament (ACL) injury, 20% of patients will develop Kellgren and Lawrence Grade 3 or 4 osteoarthritis at 10 years. Despite this, there remains a paucity of data describing outcomes of total knee arthroplasty (TKA) after prior ACL reconstruction. We aimed to describe implant survivorship, radiographic results, complications, and clinical outcomes of TKA after ACL reconstruction in one of the largest series to date.

METHODS: We identified 160 patients (165 knees) who underwent primary TKA following prior ACL reconstruction between 1990 and 2016 using our institutional total joint registry. Patients with multiligamentous knee reconstruction or osteotomy were excluded. The mean age at TKA was 56 years, 42% were female, and mean BMI was 32 kg/m^2. Ninety percent of knees were a posterior-stabilized (PS) design. Survivorship was assessed using Kaplan-Meier analysis. Mean follow-up was 8 years.

RESULTS: The 10-year survivorships free of any revision and any reoperation were 92% and 88%, respectively. Seven patients were revised for instability (global in 6 and flexion in 1), 4 for periprosthetic joint infection, and 2 for periprosthetic fracture. All revisions occurred in PS knees. There were 5 additional reoperations: 3 manipulations under anesthesia (MUA), 1 superficial wound debridement, and 1 arthroscopic synovectomy for patellar clunk. Radiographically, all non-revised knees were well-fixed at final follow-up. There were 12 nonoperative complications: 7 VTEs, 3 superficial infections, and 2 patella fractures. Knee Society Function Score improved from mean of 62 preoperatively to mean of 91 at 10 years postoperatively ($p<0.0001$).

DISCUSSION AND CONCLUSION: At mid-term follow-up, survivorship of TKA in post-ACL reconstruction knees was lower than most modern primary TKA cohorts with global instability being the most common reason for revision. In addition, the most common non-revision complication was stiffness requiring MUA, indicating that achieving proper soft tissue balance and predicting biological soft-tissue response in these knees is difficult.