Primary TKA after Multiligament Surgery: Long-Term Survivorship and Use of Constraint

Rosa S Valtanen, Charles Patrick Hannon, Nicholas Bedard, Adam Jonathan Tagliero, Aaron John Krych, Matthew Philip Abdel

INTRODUCTION: Following surgical repair and/or reconstruction of multiligament knee injuries (MLKI; ≥ 2 ligaments), up to 11% of patients require total knee arthroplasty (TKA) by 15 years. TKA after MLKI is more complex due to distorted anatomy, retained implants, possible pathologic laxity and/or altered joint kinematics, and bone loss. Thus, we aimed to report long-term implant survivorship, radiographic results, and clinical outcomes of primary TKAs after prior multiligament surgery.

METHODS: Between 1985 and 2022, 88 primary TKAs (86 patients) were performed at our institution in patients with previous multiligament surgery. The mean age was 56 years, 68% were men, and mean BMI was 32 kg/m^2. A 2:1 age, sex, BMI, and surgical year (within 5 years) matched group undergoing TKA for osteoarthritis was selected for comparison. Varus-valgus constrained and hinged implants were used more in the multiligament cohort than controls (14% vs. 2%, respectively). Femoral and/or tibial stems were used more in the multiligament group than controls (16% vs. 9%, respectively). Survivorship was analyzed with Cox models and Kaplan-Meier curves. Radiographs and Knee Society-Function Scores (KS-FS) were analyzed. Mean follow-up was 8 years.

RESULTS: The 20-year survivorship free of aseptic loosening and aseptic revision were worse in the multiligament cohort compared to controls (82% vs. 85%, p=0.02; and 75% vs. 95%, p=0.008, respectively). Survivorship free of any reoperation, PJIs, and MUAs did not differ. Radiographically, both groups had one unrevised patient with aseptic loosening. Postoperative KS-FS were higher in the multiligament group than controls at 2 years (88 vs. 82, respectively; p=0.02), but equalized by 5-year follow-up.

DISCUSSION AND CONCLUSION: Primary TKA after prior multiligament surgery is associated with reduced long-term survivorship free of aseptic loosening and aseptic revision, and necessitates higher implant constraint and stem use. Despite this, mid-term function is comparable and may initially exceed standard osteoarthritis case outcomes.