Total knee replacement in young, active patients: long-term follow-up and functional outcome: A final follow-up of previous report

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INTRODUCTION: Recently, the average age of patients undergoing Total Knee Arthroplasty (TKA) has seen a decrease, reflecting a trend towards younger, more active individuals opting for joint replacement. This study, the longest of its kind, marks a 40-year conclusion to an extensive longitudinal investigation of TKA longevity in active patients aged 55 or younger.

METHODS: This study follows up on 88 active patients (114 knees) aged 33 to 55 years (mean age 51) who underwent TKA between 1977 and 1992. Previous follow-ups were conducted at approximately 10, 25, and 30 years. Chart review was conducted, and patients were contacted by phone during each follow-up period to ascertain the status of original knee replacement and were seen in person for examinations and X-rays when possible. Survival analysis of the knee replacements was performed using the Kaplan-Meier estimator to measure implant longevity and patient survivorship. Odds ratio analysis was performed to compare the likelihood of revision to that of death in this population. Failure was defined as revision of the femoral and/or the tibial component.

RESULTS: At 40 years post-TKA, 18 patients, 23 knees, were lost-to-follow-up, however, 11 of them (15 knees) had information from the 30-year follow-up. Thus, 81 patients and 107 knees were included in the analysis. The survivorship of the original prostheses, free from failure, was 76.6% (95% CI 67.1% – 87.3%), significantly higher than the 20.4% survivorship to death (95% CI 10.5% – 39.7%) observed among patients—a rate more than three times greater ($p<0.001$). Among the 6 patients (8 knees) evaluated in person during this follow-up period, there was no observed progression of radiolucent lines, nor changes in symmetry or alignment of the original components. Additionally, among those able to be seen, the average Tegner Activity Scale (TAS) score was 4.5 (range 2 – 7), 3.2 points higher than the average preoperative TAS score of 1.3 (range 0 – 4).

DISCUSSION AND CONCLUSION: In the conclusion to our long-term follow-up study of TKA patients, our findings show that, even with earlier technology, young, active patients are more likely to outlive their prostheses than experience failure.