

Short-Term Comparison of Survivorship and Functional Outcomes for Metaphyseal Cones with Short and Long Stems in Revision Total Knee Arthroplasty

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INTRODUCTION: Printed porous titanium metaphyseal cones have become a mainstay for managing bone loss in revision total knee arthroplasty (rTKA). A short or long stem is routinely used when implanting a cone to augment fixation and offload stresses. This retrospective analysis compared the midterm survivorship and functional outcomes for use of a short or long stem with a metaphyseal cone.

METHODS: A total of 181 cases using metaphyseal cones and stems with median follow-up of 1.84 years (IQR 0.60 - 2.04) were compared based on stem type. There were 57 cases with one or two long stem(s) and 124 cases with one or two short stem(s). Cases with both a long stem and a short stem were excluded. Demographics, Kaplan-Meier survivorship, and preoperative and one-year postoperative PROMs (2011 KSS function, satisfaction, and expectation; EQ5D; SF12 PCS scores) were compared using t-tests with a significance level of $\alpha=0.05$.

RESULTS: There were no significant differences in BMI (mean \pm SD) or gender (male) between the short stem and long stem cohorts (32.2 ± 5.6 , 36.29% and 31.6 ± 5.4 , 38.60%, respectively; $p>0.05$). Patients with short stems were younger (66.0 ± 9.0 vs. 68.9 ± 9.2 , $p=0.049$). Revision free survivorship for the femoral or tibial component was 100% for long stems and 98.06% for short stems at one year and two years, respectively (log-Rank $p=0.5477$). The two revisions in the short group were for infection, thus the survivorship for aseptic loosening was 100% at two years for both cohorts. There were no significant differences in preoperative or postoperative PROMs.

DISCUSSION: This study demonstrated highly porous printed metaphyseal cones provided RTKA with excellent early survivorship and similar PROMs whether a short or long stem was used. Additional studies will be needed to discern any long-term differences.

SIGNIFICANCE/CLINICAL RELEVANCE: Highly porous printed metaphyseal cones provided RTKA with excellent early survivorship and similar PROMs whether a short or long stem was used.