

Comparative Survival Analysis of Collared and Collarless Configurations of a Newly Designed, Press-Fit, Triple-Tapered Femoral Stem

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INTRODUCTION: In press-fit total hip arthroplasty (THA), ongoing debate exists on the benefits of using a calcar collar. Previous devices have been studied at length; however, the collared and collarless configurations of a newly designed triple-taper femoral stem have not been analyzed. This study sought to analyze the comparative survivorship of these configurations at a minimum follow-up of one year, hypothesizing clinically equivalent results.

METHODS: Adult patients having undergone primary THA using a specific device (Actis; Johnson & Johnson MedTech) between December 2021 and July 2024 were reviewed. For inclusion, patients were required to have been indicated for THA for either avascular necrosis or osteoarthritis and have a minimum one-year follow-up. Patients were excluded for indications other than those listed, deceasing by the time of study, or any diagnosis of inflammatory arthritis. Collar configuration, patient demographics, postoperative medical history, and other relevant data were collected and analyzed. Kaplan Meier curves and log-rank tests were used to visualize and analyze survivorship, respectively. Otherwise, t -, χ^2 -, or Fisher' exact-tests were used to analyze data.

RESULTS: In total, 814 hips (750 patients) were included, composed of 542 (66.6%) collared stems THAs and 272 (33.4%) collarless without significant demographic differences. Female patients comprised 56.4% of the cohort. Mean follow-ups for the collared and collarless cohorts were 30.3 ± 8.7 and 23.1 ± 5.4 months, respectively ($P < .0001$). Reoperation-free survivorship was 98.0 and 98.9% for collared and collarless stems, respectively ($P = .4$; Figure 1). Any component revision-free survivorship was 98.7 and 98.9% for collared and collarless stems, respectively ($P = .9$). Femoral component revision-free survivorship was 99.3 and 98.9% for collared and collarless stems ($P = .5$). No significant association between readmittance rates and collar configuration was noted ($P = .3$).

DISCUSSION: In this newly designed press-fit, triple-tapered femoral stem, both collared and collarless configurations had very high and nondifferent reoperation-, any revision-, and femoral component revision-free survivorship at a mean follow-up of 27.9 months.

SIGNIFICANCE/CLINICAL RELEVANCE: By studying the survivorship of various configurations of press-fit femoral stems, clinicians can become better informed of the device's performance and participate in evidence-based medicine.

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IMAGES:

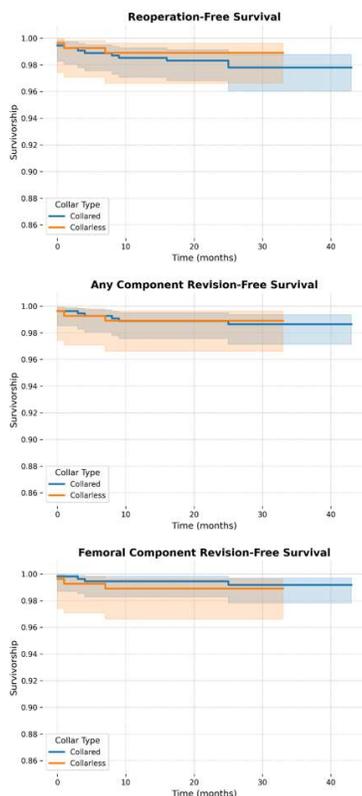


Figure 1. Kaplan-Meier Curves of Reoperation-, Any Component Revision-, and Femoral Component Revision-Free Survivorship. Shaded region indicates the 95% confidence interval.