

Is There a Benefit to Modularity for Femoral Revisions When Using a Splined, Tapered Titanium Stem?

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Introduction: Proposed benefits of modularity for femoral revisions in total hip arthroplasty (THA) include more precise biomechanical restoration, but this has not been proven with use of a splined, tapered design. This study's purpose was to compare radiographic outcomes of restoration of hip length and offset as well as complications with the use of modular vs. monoblock splined, tapered titanium stems in revision THA.

Methods: We retrospectively reviewed 145 femoral revisions performed over 18 years at one institution with minimum 2-year follow-up (mean, 5.12 years; range, 2 to 17.3 years). Patients receiving a modular (67) or monoblock (78) splined, tapered titanium stem for femoral revision were included.

Results: Patients in the modular cohort were older (67.2 ± 13.0 years vs. 60.2 ± 12.1 years; $P < 0.01$) and had a greater percentage of Paprosky IIB or IV defects (20.5% vs. 5.3%; $P < 0.01$). There were no significant differences in rates of intraoperative fracture (9.0% vs. 3.8%; $P = 0.3$), postoperative fracture (3.0% vs. 1.3%; $P = 0.5$), aseptic loosening (4.5% vs. 6.4%; $P = 0.7$), dislocation (11.9% vs. 5.1%; $P = 0.23$), or reoperation for any reason (22.3% vs. 17.9%; $P = 0.7$) between the modular and monoblock cohorts, respectively. Leg length discrepancy differed between groups (0.89 ± 12.1 mm vs. -2.98 ± 10.9 mm; $P = 0.04$), though there was no difference in rates of LLD > 1 cm (35.8% vs. 38.5%, $P = 0.74$). There were no differences in component subsidence > 5 mm (3.13 ± 5.6 mm vs. 2.17 ± 2.1 mm; $P = 0.4$) or hip offset (73.2 ± 12.5 mm vs. 75.9 ± 9.3 mm; $P = 0.15$) between the modular and monoblock cohorts. Restoration of hip offset compared to the contralateral hip did not differ (-5.88 ± 10.1 mm vs. -5.07 ± 12.2 mm; $P = 0.67$). Harris Hip Score was similar between groups (70.7 ± 17.9 vs. 73.9 ± 19.7 ; $P = 0.36$) at minimum 2-year follow-up.

Conclusions: Modular and monoblock splined, tapered titanium stems demonstrated comparable subsidence, hip offset, and complication rates for femoral revisions. Future investigations including a greater number of patients are required to determine if modularity is beneficial for more complex femoral defect.