

Extensively-Porous Coated Stems Demonstrate Excellent Long-Term Survivorship in Revision Total Hip Arthroplasty

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INTRODUCTION: Extensively-porous coated cylindrical stems have demonstrated excellent results in revision total hip arthroplasty (THA). However, most studies are of mid-term follow-up duration and modest cohort size. This study aimed to evaluate the long-term clinical and radiographic outcomes of a very large series of a single extensively-porous coated femoral stem design and identify risk factors associated with stem failure.

METHODS: From 1992-2003, 925 extensively-porous coated stems of a single design were utilized in revision THAs at a single institution. Mean age was 65 years, and 57% were males. Clinical outcomes were assessed with Harris hip scores (HHSs). Preoperative bone loss was graded using Paprosky's classification. Radiographic assessment for stem fixation was categorized using Engh criteria. Kaplan-Meier survivorship was estimated, and risk analysis used Cox proportional survival method. Mean follow up was 13 years.

RESULTS: Mean HHS improved from 56 to 80 at last follow up ($p < 0.001$). Fifty-three (5%) femoral stems (5%) were rerevised: 26 for aseptic loosening, 11 for stem fractures, 8 for infection, 5 for periprosthetic femoral fractures (all Vancouver B₂), and 3 for dislocation. The cumulative incidence of aseptic femoral loosening and femoral rerevision for any reason were 3.4% and 7.7% at 20 years, respectively. Nine of eleven stem fractures occurred with 10.5 – 13.5 mm diameters at a mean of 6 years. Radiographic review of unrevised stems demonstrated 94% bone-ingrown, 4% fibrous stable, and 2% loose. Demographics, femoral bone loss, stem diameter, and length were not predictors of stem rerevision.

DISCUSSION AND CONCLUSION: In a large series of revision THAs using a single extensively-porous coated stem design, the cumulative incidence of rerevision for aseptic femoral loosening was 3.4% at 20 years and the rate of radiographic loosening in unrevised stems was only 2%. These data provide a long-term benchmark against which to compare newer uncemented revision stem design categories such as fluted tapered implants.