

## Reproducible Fixation with a Modular, Fluted, Tapered Titanium Stem in Revision Hip Arthroplasty At 8-13 Years Follow-up

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**Introduction:** Severe bone loss creates a challenge for fixation in femoral revision. The goal of the study was to assess reproducibility of fixation and clinical outcomes of femoral revision with bone loss using a modular, fluted, tapered distally fixing stem.

**Methods:** 92 consecutive patients (96 hips) underwent hip revision surgery using the same design of a modular, fluted, tapered titanium stem between 1998 and 2005. Fourteen patients with 16 hips died before a 2-year follow-up. Eighty hips were followed for an average of 11.3 years (range of 8 to 13.5 years). Bone loss was classified as per Paprosky's classification, osseointegration assessed according to a modified system of Engh et al, and Harris Hip Score was used to document pain and function. Serial radiographs were reviewed by an independent observer to assess subsidence, osseointegration and bony reconstitution.

**Results:** The average patient age was 68 years at the time of surgery (range 40 to 91). 80% hips had at least Paprosky type 3A proximal bone loss and 41% had an associated proximal femoral osteotomy. Pre-operative Harris Hip scores (HHS) averaged 50.368 (range 22 to 72.775) and improved to an average HHS of 87.432 (range 63.450 to 99.825) at last follow-up. The HHS improved an average of 37.103 points (range 13.750 to 58.950). Radiographically, osseointegration was evident in all hips. No hips had measurable migration beyond 5 mm. 61% hips had evidence of bone reconstitution and 27% demonstrated diaphyseal stress shielding. One well-fixed distal stem was revised for stem fracture, and two proximal segments were revised for recurrent dislocation.

**Conclusion:** Reproducible fixation and clinical improvement were consistently achieved with this stem design in the setting of femoral bone loss.