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## Introduction

One of the concerns with the use of proximally coated tapered femoral stems in total hip replacement (THR) is that mal-alignment, either in a varus or valgus position could lead to early loosening, failure of fixation, or end of stem pain. The purpose of this study is to report on our experience with a modern proximally coated tapered stem which has been placed in relative malalignment.

## Methods

Between 5/01 and 4/04 we placed 447 proximally coated tapered uncemented stems in 431 consecutive patients. The diagnosis was osteoarthritis in 435 of the 447 hips. Of this group, we identified 20 stems were placed into varus angulation (range 2 to 5 degrees off the long axis of the femoral shaft) and 17 stems were placed into valgus angulation (range 2 to 4 degrees). The average age of the malaligned group was 68. Six of the mal-aligned hips were lost to follow up. Average follow up of the remaining group was 12 years, (range 11-14 years). Serial radiographs were evaluated by an independent, experienced radiographer. HHS scores were recorded.



Stem in Varus Position.



Stem in Valgus Position.

## Results

There were no revisions in this group. All stems were osseous integrated. There were no stems classified as loose or impending loose. We identified no evidence of stress shielding or cortical hypertrophy. There was no subsidence of > 3 mm in any stem. No patient complained of thigh pain beyond 1 year. HHS scores at final follow up in the study group was 92 (range 72 to 100) and in the larger group was 92 (range 73-100). We found no difference in radiographic osseous integration or clinical outcome between either the varus or valgus stems.

## Conclusion

It appears that modern proximally coated tapered stems are tolerant of both mild varus and valgus malalignment at midterm follow up, achieve predictable ingrowth, and do not appear to be associated with an increase in thigh pain.