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## **Second-generation uncemented stems: excellent 5-13-year results.**

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**INTRODUCTION:** The purpose of this study was to prospectively evaluate the 5-13-year results of a cementless total hip arthroplasty with a special focus on the survivorship, occurrence of osteolysis, incidence of intraoperative femoral fractures, thigh pain, and cortical hypertrophy of the femoral stem. The femoral component used in this study was titanium fluted, slotted, symmetrical component that was prepared with intraoperative machining. The proximal third of the stem had hydroxyl-apatite coating and horizontal steps. **METHODS:** The clinical and radiographical results of a consecutive series of 157 total hip arthroplasties (124 patients) with this stem were investigated. Minimum follow-up was 5 years. The average age of the patients at the time of surgery was 47 years. Three patients died and ten patients were lost to follow-up, leaving 142 hips for evaluation. The clinical result was evaluated on the basis of the Merle d'Aubigné score, complications and thigh pain. A detailed radiographic analysis was performed at each follow-up visit. Kaplan-Meier survivorship analysis was performed to evaluate stem, cup, and bearing survivorship. **RESULTS:** The mean follow-up was 8.5 years (range 5-13 years). The average Merle d'Aubigné score improved from 10.5 points preoperatively to 17.4 points postoperatively. The cumulative 10-year survival rate was 99% for the femoral component, 99% for the acetabular component, and 69% for the bearing. Thigh pain was identified in three patients (2%). There was no distal femoral osteolysis. Seventy-nine percent of all the hips had endosteal spot welds around the coated, proximal one-third of the prosthesis. 51% had radiodense lines around the distal tip of the prosthesis, and 3% had cortical hypertrophy. One undersized stem and one cup were revised for aseptic loosening, and 25 bearings were exchanged. **CONCLUSIONS:** Uncemented, machined, fluted titanium canal-filling femoral components achieve reliable fixation in this young patient population. They have a decreased incidence of activity-related thigh pain, lower rate of intraoperative femur fractures and cortical hypertrophy with comparable bone-ingrowth in comparison to other second-generation uncemented femoral components described in literature. Bearing wear and the need for bearing exchange was the only limitation of these constructs.

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