

Low Risk of Fracture using a Cementless Triple-Tapered Collared Femoral Stem with Automated Impaction in Direct Anterior Approach Total Hip Arthroplasty

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INTRODUCTION:

Direct anterior approach (DAA) total hip arthroplasty (THA) has been associated with increased periprosthetic femur fracture (PFF) risk. The aim of our study was to evaluate the fracture risk utilizing a triple tapered, collared stem with automated impaction through the anterior approach.

METHODS:

We retrospectively reviewed 1453 consecutive DAA THA at a single institution performed by four experienced DAA THA surgeons. We selected procedures performed between 2019 and 2021 and collected data on age, gender, body mass index (BMI), preoperative diagnosis, and intraoperative and early postoperative PFF, defined as any femoral fracture in the initial 6 weeks postoperatively. Preoperative radiographs were evaluated by an independent observer to determine femoral neck-shaft angle and Dorr classification. We used the Wilcoxon Rank sum test for continuous variables and the chi-square test for categorical variables to assess differences between patients with a PFF and those without. We also assessed the association of having a PFF with potential risk factors in unadjusted and adjusted regression analyses.

RESULTS:

In all, 24 PFFs (1.6%) occurred, of which 18 (1.2%) were recognized and managed intraoperatively (15 calcar, 2 greater trochanter, 1 posterior cortical). Six PFFs (0.4%) were identified postoperatively (5 greater trochanter, 1 diaphyseal) of which 1 required a revision. Identified risk factors for fracture in adjusted regression models included female sex (OR=2.76, p=0.047) and preoperative coxa valga (OR= 4.54, p=0.005).

DISCUSSION AND CONCLUSION:

The incidence of periprosthetic femoral fractures is low using a triple tapered, collared cementless femoral stem with automated impaction through the DAA with only 1/1453 requiring revision for fracture. Our findings are in agreement with previous reports that have demonstrated female gender and preoperative valgus neck angle are risk factors for PFF.