

Is there a difference in complication rate between early femur fracture after hip resurfacing compared to total hip?

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INTRODUCTION: Periprosthetic femoral neck fractures are a known complication of hip resurfacing arthroplasty (HRA) requiring revision to a total hip arthroplasty (THA), with a reported incidence of 1%. Conversely, early proximal femur fracture after total hip arthroplasty is a well-reported complication in just under 1% of cases. We sought to review the incidence of early postoperative periprosthetic femoral neck fractures (within 90 days) and compare the outcome of revision to a cohort of early periprosthetic femur fractures following total hip arthroplasty.

METHODS: An IRB-approved, retrospective study of consecutive patients who underwent HRA at our institution was performed between 2002-2021 (N=1875). All periprosthetic femoral neck fractures within 90 days of HRA were identified. A separate consecutive series of 1,145 THAs were reviewed for periprosthetic femur fractures around a short cementless stem (Taperloc Complete Microplasty stem; Zimmer Biomet) and were matched for comparison. Intra-operative and postoperative femur fractures that did not undergo subsequent surgery were excluded. Fractures with stable implants who underwent fixation were excluded. Vancouver B2 and B3 fractures requiring stem revision were included in the comparative cohort. A chart review was conducted to assess the morbidity associated with early revision surgery, which was defined as any subsequent reoperation after the index revision..

RESULTS SECTION: 1875 HRA were performed within the study period (90% male, age 50.3 years [19-74]). 9/14 had a diagnosis of periprosthetic femoral neck fractures, and an overall incidence of 0.5% within 90 days of index surgery. 39/1145 (3.4%) of THA patients sustained a periprosthetic femur fracture. 9/39 (23%) met the inclusion criteria. Groups differed significantly by sex and age [HRA 89% male, mean age 55.7 vs. THA 22% male, mean age 72.6; $p < 0.05$]. Preop ASA scores were equivalent between groups ($p < 0.05$). 2/9 (22%) and 5/9 (56%) of the HRA and THA groups, respectively, required reoperation for any cause. Reasons for reoperation included two infections in the HRA cohort, and infection (3), recurrent instability (1), and stem subsidence (1) in the THA cohort.

DISCUSSION: The incidence of early failure of metal-on-metal hip resurfacing arthroplasty due to periprosthetic femoral neck fractures is marginal. Early conversion to THA is a safe procedure which can be performed via the initial surgical approach with limited associated morbidity. Conversely, early failure of THA secondary to periprosthetic femur fracture is associated with significant morbidity in this series.

SIGNIFICANCE/CLINICAL RELEVANCE: This study will clarify the difference in the complication rate between total hip arthroplasty and resurfacing.

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