Ten-Year Cumulative Incidence and Indications for Revision Total Hip Arthroplasty among Patients with Sickle Cell Disease

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INTRODUCTION: Total hip arthroplasty (THA) implant survivorship and etiology for implant failure in patients with sickle cell disease (SCD) remains understudied. Therefore, the purpose of this study was to estimate and compare 10-year THA implant survivorship and indications for revision in those with SCD undergoing THA for osteonecrosis (ON) versus to control cohorts of patients THA for osteoarthritis (OA).

METHODS:

Patients who underwent primary THA were identified using a large insurance database. Sickle cell disease patients undergoing ON-indicated THA were propensity-score matched in a 1:4 ratio by age, gender, and Charlson Comorbidity Index (CCI) to control patients undergoing ON-indicated THA. The 10-year cumulative incidence rates of revision were determined using Kaplan-Meier survival analysis. Multivariable analysis was conducted using Cox proportional hazard modeling. Chi-squared analysis was conducted to compare the indications for revisions between cohorts. RESULTS:

In total, 1,669 SCD patients were identified; 6,653 patients included in the matched ON control; 78,972 included in the unmatched ON control; and 757,303 patients included in the unmatched OA control. Patient demographic information can be found in Table 1 and Table 2. Compared to the unmatched OA control, SCD patients had higher a 10-year all-cause revision rate (HR: 1.36; 95% CI: 1.06-1.74; P = 0.017; Table 3; Figure 1), with patients being more likely to undergo revision for PJI (1.02% versus 0.57%; P = 0.025; Table 5). There was no significant difference in 10-year all-cause revision nor difference in the indications for revision in the SCD cohort when compared to both the unmatched and matched ON-control cohorts (P > 0.05 for all; Table 4).

DISCUSSION AND CONCLUSION: This study demonstrates comparable 10-year all-cause revision rates in SCD patients when compared to ON controls. The higher all-cause revision, most likely due to periprosthetic joint infection (PJI), when compared to the general OA population may be associated with the higher infectious burden of those with SCD and/or the indicated ON. Thus, perioperative and postoperative optimization should be prioritized in this patient population to minimize both the prior demonstrated short-term risk as well as the newly demonstrated long-term risk when compared to the general population.

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