Impact of Sickle Cell Disease on Complications following Primary Total Hip Arthroplasty: A Matched Cohort Analysis

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INTRODUCTION:
As one of the sequelae of sickle cell disease (SCD), avascular necrosis (AVN) of the femoral head is often managed with total hip arthroplasty (THA). Prior low-powered analyses have found that SCD patients undergoing THA may have increased rates of postoperative complications relative to those without SCD. The purpose of this study was to determine whether sickle cell patients undergoing THA for AVN are at increased risk of medical and surgical complications relative to matched cohorts of non-SCD patients undergoing THA for osteoarthritis (OA) or AVN.

METHODS:
Patients who underwent THA with minimum two-year follow up were retrospectively identified in a national insurance claims database using CPT and ICD codes. Patients were stratified into three cohorts: AVN with SCD, AVN without SCD, and OA without SCD. These cohorts were propensity-matched based on age, sex, Charlson Comorbidity Index, and obesity. Differences in two-year medical and surgical complications were analyzed using Chi-square and Fisher's exact tests.

RESULTS:
In total, 881 patients were included in each cohort. All three cohorts were successfully matched with no differences in demographics or comorbidities (Table 1). Relative to the cohorts without SCD, the AVN with SCD cohort had significantly higher incidences of all analyzed medical complications (p<0.001 for all), including thromboembolic events, cardiopulmonary complications, infectious complications, and transfusions (Table 2). The AVN with SCD cohort also had a significantly higher rate of periprosthetic joint infection (5.0% in AVN with SCD vs. 2.8% in AVN without SCD [p=0.019] and 2.5% in OA without SCD [p=0.005]) and aseptic loosening (1.9% in AVN with SCD vs. 0.68% in AVN without SCD [p=0.021]; Table 3).

DISCUSSION AND CONCLUSION:
Sickle cell patients undergoing THA for AVN had significantly higher two-year medical and surgical complications, including thromboembolic events, periprosthetic joint infection, and aseptic loosening. Clinicians should be mindful of these potential risks when counseling and managing this patient population.