

The Impact of Sickle Cell Disease on Outcomes Following Adult Spinal Fusion: A Propensity Scored-Match Analysis

Introduction: This study aimed to compare outcomes between patients with and without sickle cell disease (SCD) undergoing surgery for spinal fusion. There is limited literature evaluating SCD impacts on spinal fusion.

Methods: The National Inpatient Sample was queried from 2005 to 2012 to identify patients (>18 years old) who underwent spinal fusion. SCD patients were then identified and 1:1 propensity score matched by age, gender, and BMI to patients without SCD.

Univariate analysis was used to compare demographics, complication rates, and mortality rates. Multivariate binary logistic regression was used to identify independent predictors of adverse outcomes using a diagnosis of SCD, age, sex, and BMI as covariates.

Results: Of the 968 included patients 484 had SCD and were matched to 484 who did not. There was no disparity between groups in sex (69.6% female vs. 69.8% female $p=0.944$), BMI (19.2% vs 17.1% $p=0.405$), and age (50.87 years vs 50.83 years, $p=0.965$).

Patients with SCD had significantly longer stay (4.71 days vs. 3.89 days, $p=0.010$) and higher Deyo score (0.69 vs. 0.47, $p=0.001$).

Regression identified SCD as an independent risk factor for surgical complications (OR:1.4 [1.0 – 2.1], $p=0.037$), blood transfusions (OR:2.6 [1.6 – 4.1], $p<0.001$), and medical complications (OR: 2.1 [1.2 – 4.0], $p=0.015$) (Table 1).

Conclusion: Among patients undergoing spinal fusion, patients with SCD, experienced higher rates of medical and surgical complications as well as blood transfusions. A diagnosis of SCD was an independent predictor of these outcomes. These results can support management of postoperative expectations and concerns in this patient cohort.