Poorly Controlled Diabetic Hip Fracture Patients With Hemoglobin A1c >8.0 Should Not Undergo Arthroplasty Due to High Short and Long-Term Mortality Risk

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Purpose: This study aims to assess how the severity of diabetes impacts outcomes in geriatric patients when treated with operative repair versus arthroplasty following hip fracture.

Methods: An IRB-approved prospectively collected hip fracture registry at an urban academic medical center was reviewed for all patients with a diagnosis of diabetes from October 2014 to November 2021. Each patient was reviewed for demographics including hemoglobin A1c (HA1c) at time of admission, type of fixation provided, hospital quality measures, and outcomes. Patients were subsequently split into cohorts based on their operative intervention: open reduction and internal fixation (ORIF), closed reduction and percutaneous pinning, sliding hip screws, or short/long cephalomedullary nail cohort or arthroplasty cohort (hemi- and total hip arthroplasty). Comparative analyses were conducted between the ORIF and arthroplasty cohorts. A sub analysis was conducted to further compare the outcomes of these patients when stratified by an HA1c cutoff of 8.0%.

Results: From a total cohort of 502 diabetic patients, 341 patients (68%) comprised the ORIF cohort, and 161 (32%) comprised the arthroplasty cohort. There were no differences in demographics or injury details between the cohorts. Without stratification by severity of disease, there were no differences in outcomes between the ORIF and arthroplasty cohorts. However, when stratified by HA1c >8.0% patients in the ORIF cohort had an increased rate of inpatient morality (P = 0.002). Similarly, patients in the arthroplasty cohort experienced significantly higher rates of major inpatient complications (P = 0.003), mortality through 1 year (P<0.001), and were less likely to be discharged home following their admission (P = 0.044). When comparing patients with an HA1c >8.0%, patients treated with arthroplasty experienced a 2x higher rate of 1-year mortality.

Conclusion: Diabetes alone does not significantly affect outcomes of one type of operative intervention more than the other. However, when accounting for severity of disease, poorly controlled diabetics with HA1c> 8.0% treated with arthroplasty for their hip fracture experienced significantly worse outcomes. Poorly controlled diabetics with HA1c >8.0% and a femoral neck fracture may warrant damage control fixation, aggressive postoperative glucose control, and delayed arthroplasty (if their fracture does not heal) when their HA1c levels are <8.0% in order to improve their 1-year mortality risk.