Postoperative Complications Following Total Hip Arthroplasty in Patients With Monoclonal Gammopathy of Undetermined Significance

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INTRODUCTION: Monoclonal gammopathy of undetermined significance (MGUS) is a premalignant plasma cell disorder that may progress to multiple myeloma (MM). Although a precursor to destructive bone disease, MGUS remains underexplored in orthopaedics. This study assessed postoperative complications following total hip arthroplasty (THA) in patients with MGUS.

METHODS: A retrospective cohort analysis of adult patients who underwent primary THA from 2005 to 2023 was performed using the TriNetX network. After (1:1) propensity score matching for demographics, comorbidities, and body mass index, two cohorts with and without MGUS were generated. Individuals with a MM diagnosis before THA were excluded. Medical complications were analyzed at 90 days; healthcare utilization, surgical complications, and all-cause mortality were analyzed at 30 days, 90 days, 1 year, and 2 years postoperatively. Measures of association to assess between-group risks were reported as odds ratios (OR) with 95% confidence intervals (CI).

RESULTS: A total of 1,746 propensity-matched patients (MGUS: 338 males, 477 females; Non-MGUS: 338 males, 476 females) were analyzed. Cohorts were adequately matched for age, sex, race, comorbidities, and body mass index (all $P>0.05$). MGUS was associated with increased odds of transfusion at all intervals: 30 days (OR 2.192, 95% CI 1.128-4.621, $P=0.018$), 90 days (OR 2.038, 95% CI 1.110-3.742, $P=0.019$), 1 year (OR 2.215, 95% CI 1.275-3.848, $P=0.004$), and 2 years (OR 2.013, 95% CI 1.220-3.322, $P=0.005$). MGUS patients also had greater odds of ED utilization at every time point: 30 days (OR 1.655, 95% CI 1.180-2.320, $P=0.003$), 90 days (OR 1.554, 95% CI 1.188-2.033, $P=0.001$), 1 year (OR 1.502, 95% CI 1.220-1.850, $P<0.001$), and 2 years (OR 1.350, 95% CI 1.114-1.635, $P=0.002$). Odds of readmission were also greater in MGUS at 1 and 2 years (1 year: OR 1.361, 95% CI 1.115-1.660, $P=0.002$; 2 years: OR 1.285, 95% 1.062-1.555, $P=0.010$). MGUS was not associated with an increased likelihood of revision arthroplasty after two years (OR 0.822, CI 0.445-1.521; $P=0.532$). Other surgical complications including periprosthetic fracture and periprosthetic mechanical complications were similar between MGUS and Non-MGUS patients (all $P>0.05$). MGUS had a higher odds of urinary tract infection (OR 1.860, 95% CI 1.259-2.747, $P=0.002$) and pooled medical complications at 90 days (OR 1.308, 95% CI 1.050-1.629, $P=0.016$). MGUS patients were also more likely experience all-cause mortality at 1 year (OR 1.750, 95% CI 1.069-2.864, $P=0.024$) and 2 years (OR 1.581, 95% CI 1.092-2.290, $P=0.014$). Surgical site infection at 90 days (OR 0.470, CI 0.220-1.004; $P=0.0046$) and prosthetic joint infection at 1 year (OR 0.410, CI 0.195-0.862; $P=0.015$) were less likely in MGUS.

DISCUSSION: Patients with MGUS have similar odds of revision surgery but higher rates of pooled medical complications, healthcare utilization, transfusion, and all-cause mortality following THA compared to matched controls. Additional studies are warranted to confirm these findings and expand the existing orthopaedic literature pertaining to MGUS.

SIGNIFICANCE/CLINICAL RELEVANCE: Although MGUS patients undergoing THA do not experience elevated revision rates, they may have considerable postoperative healthcare needs. This population warrants increased perioperative vigilance, especially concerning the need for transfusion following THA.
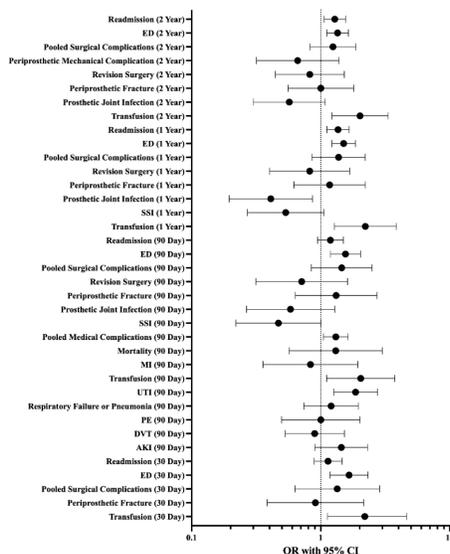

Figure 1. Forest plot of postoperative outcomes in adult patients undergoing THA, comparing MGUS to Non-MGUS. Odds Ratios (OR) and 95% confidence intervals (CIs) are shown. (AKI, Acute Kidney Injury; DVT, Deep Vein Thrombosis; ED, Emergency Department; MI, Myocardial Infarction; SSI, Surgical Site Infection; UTI, Urinary Tract Infection).