

Total Joint Arthroplasty Outcomes in Patients with Multiple Myeloma and Monoclonal Gammopathy of Undetermined Significance

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INTRODUCTION: Multiple myeloma (MM) and monoclonal gammopathy of undetermined significance (MGUS) are hematologic plasma cell disorders associated with skeletal fragility and surgical complexity. The purpose of this study was to evaluate outcomes of patients with a history of MM or MGUS undergoing hip and knee total joint arthroplasty (TJA), with a primary focus on postoperative complications and the need for secondary procedures.

METHODS: Institutional review board approval was granted prior to the initiation of this study. A retrospective analysis was conducted of MM and MGUS patients who underwent TJA at our tertiary academic institution from 2005 to 2023. Included patients had a history of MM or MGUS prior to undergoing primary or secondary TJA, with a minimum of 1-year postoperative follow-up. The primary outcome was perioperative or postoperative complications, including the need for revision surgery. Secondary outcomes included patient pain as measured by Visual Analog Score (VAS) and strength. Univariate and multivariate logistic regression, competing risk analyses, and Kaplan Meier survivorship curves were used for statistical analysis. Statistical significance was set at a *P*-value < 0.05.

RESULTS SECTION: A total of 79 patients (33 males, 46 females) were analyzed, including 50 MM and 29 MGUS patients. Mean follow-up for MM and MGUS patients was 5.16 ± 4.12 years and 5.35 ± 2.41 years, respectively. 20.3% of patients required secondary procedures (MM: 20.0%, MGUS: 20.7%). Kaplan-Meier analysis revealed similar overall survivorship and time to revision between groups. Multivariate analysis identified avascular necrosis (*P* = 0.010) and pathologic fracture (*P* = 0.015) as independent predictors of postoperative complications. MM versus MGUS diagnosis was not significantly associated with revision risk (*P* = 0.163). Both cohorts experienced significant postoperative pain reduction (MM: *P* < 0.001; MGUS: *P* = 0.009), and MM patients showed improved strength (*P* < 0.001), while MGUS patients did not (*P* = 0.35).

DISCUSSION: Patients with MM and MGUS undergoing TJA experienced comparable complication and revision rates, despite differing hematologic profiles. Importantly, avascular necrosis and pathologic fracture emerged as independent predictors of postoperative complications in these populations, highlighting the role of baseline skeletal pathology in postoperative outcomes. The similar survivorship between MM and MGUS cohorts suggests that TJA remains a dependable treatment option, although elevated revision rates among MGUS patients warrant further exploration. Limitations include this study's retrospective design, single-institution dataset, and potential charting inaccuracies within the medical record.

SIGNIFICANCE/CLINICAL RELEVANCE: TJA is a viable treatment for degenerative joint disease in patients with MM and MGUS, but surgeons should recognize that avascular necrosis and pathologic fracture increase the risk of postoperative complications. Careful preoperative counseling and risk stratification are essential in patients with a history of plasma cell disorders.

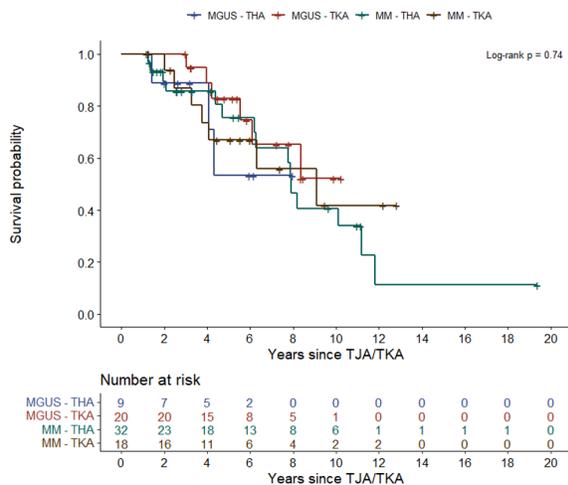


Figure 1: Kaplan-Meier curve of overall patient survival. For individuals who passed away date of death is used, otherwise the date of final evaluation is reported.

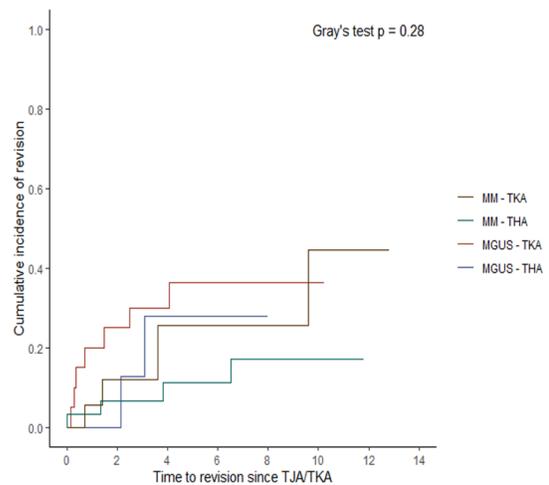


Figure 2: Kaplan-Meier curve of time to revision surgery (years).