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"Assessing Total Knee Arthroplasty Patient Reported Outcomes: Intraosseous Vancomycin Versus Intravenous Antibiotic Injection"

Introduction: Prevention of total knee arthroplasty (TKA) periprosthetic joint infection (PJI) requires implementation of perioperative precautions, especially for high-risk patients. Intravenous (IV) vancomycin is commonly used for PJI prophylaxis but is commonly associated with hypersensitivity reactions and may not achieve adequate tissue concentration levels. Intraosseous (IO) vancomycin injection has been studied as an alternative, showing lower infection rates and higher local tissue concentrations compared to IV administration. However, there is limited data on how IO vancomycin affects patient-reported outcomes (PROs) post-TKA. Therefore, the primary objective of this study is to analyze KOOS pain scores at 2 weeks following TKA in high-risk patients receiving IO vancomycin compared to patients receiving IV cefazolin.

Methods: This retrospective case-control study included twenty-eight high-risk patients who underwent unilateral primary TKA between January 2022 and September 2024, performed by a single surgeon. High-risk patients were defined as having one or more of the following risk factors: current smoker, HbA1c ≥ 7, and BMI ≥ 40 kg/m2. Eleven consecutive patients who received IO Vancomycin were matched to non-IO Vancomycin patients using the PSMATCH procedure in SAS for 1:1 optimal propensity score matching, with sex, BMI, age, smoking status, and baseline KOOS as covariates. Two weeks post TKA KOOS scores were compared using proc MIXED, with baseline scores as covariate.

Results: A total of twenty-two patients were included in the analysis (11 IO vs. 11 non-IO). The patients had an average age of 64.5 years (range: 50–81) and an average BMI of 36.8 kg/m². The cohort was predominantly female (81.8%) and 50.0% were of White race. As expected from matching, baseline KOOS subscales did not differ significantly between the two groups: Symptoms scores were 36.3 for IO and 40.2 for non-IO (p=0.633), and Pain scores were 29.8 for IO and 34.1 for non-IO (p=0.604). Two weeks post-TKA, KOOS scores were collected for 12 out of the 22 patients and showed no significant differences between the groups: Pain scores were 45.6 for IO and 47.7 for non-IO (p=0.893), and Symptoms scores were 53.9 for IO and 65.9 for non-IO (p=0.183).

Conclusion: This study reported no statistically significant differences in patient-reported outcomes (PROs) between high-risk TKA patients receiving intraosseous (IO) vancomycin compared to those receiving intravenous (IV) antibiotics. However, there appears to be a trend suggesting that patients receiving IO vancomycin may report better PROs. These results underscore the necessity for further investigation to understand the factors behind this trend and to enhance antibiotic administration strategies for high-risk TKA populations.