

Does Antibiotic Laden Bone Cement Reduce Acute Periprosthetic Joint Infection in Primary Total Knee Arthroplasty?

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INTRODUCTION: Periprosthetic joint infection (PJI) can be a devastating complication of total knee arthroplasty (TKA). One method believed to decrease the incidence of PJI is antibiotic laden bone cement (ALBC). Despite studies conducted in Europe and Asia showing the effectiveness of ALBC in preventing PJI in primary TKA, similar results have not been found in the United States. Thus, current clinical practice guidelines do not recommend the use of ALBC in primary TKA. The purpose of this study was to compare ALBC to plain cement (PC) in preventing PJI in primary TKA.

METHODS: This retrospective analysis included 109,242 Medicare patients in the American Joint Replacement Registry who underwent a cemented primary TKA from January 2017 to March 2021. Patients who received ALBC were compared to patients who received PC. Demographic and case-specific variables such as age, sex, race, preoperative diagnosis (osteoarthritis versus other), body mass index (BMI), Charlson Comorbidity Index (CCI), laterality, anesthesia type, and operative time were used to create propensity scores. A logistic regression was run to predict the probability of receiving ALBC. In addition to the propensity stratified analysis, a multivariate model was run on the full (unstratified) population, using the same covariates as were used to create the propensity model.

RESULTS: Logistic regression analysis showed that a higher preoperative diagnosis of osteoarthritis, higher CCI, higher BMI, female sex, race, and anesthesia requirements increased a patient's probability of receiving ALBC. In the full (unstratified) multivariate model, ALBC did not show a statistically significant difference in risk of revision for infection compared to PC in primary TKA (0.972[0.81,1.167]).

DISCUSSION AND CONCLUSION: The use of ALBC in primary TKA has not been shown to be more efficacious than PC in preventing PJI within the population of Medicare patients in the United States. Future study should prospectively investigate this topic to address the discrepancies between different countries.