Intraosseous Vancomycin Vs Intravenous Vancomycin In Unicompartmental Knee Arthroplasty

Introduction: Intraosseous vancomycin (IOV) has been shown to decrease periprosthetic joint infection (PJI) when compared to intravenous administration of vancomycin (IVV) in total knee arthroplasty. There have been no studies to date evaluating the use of IOV in unicompartmental knee arthroplasty (UKA). The primary purpose of this study was to evaluate the effectiveness and safety of using IOV compared to IVV in UKA
Methods: This is a retrospective cohort study of 562 patients who underwent UKA in a large healthcare system between August 2016 and October 2024. Patients who received IOV were compared to those who received IVV prior to UKA. The primary study outcomes were PJI and wound complications at 30 days, 90 days, and 1 year.
Results: From 2016 to 2024 there were 396 UKA patients that received IVV and 166 that received IOV. Topical vancomycin powder was used more frequently in the IOV group (76.5% versus 43.2%, $P<0.001$), while vancomycin was added to cement more frequently in the IVV group (19.9 versus 4.8%, $P<0.001$). There was 1 PJI in the IVV group and no PJIs in the IOV group. There were no statistically significant differences in PJI incidence, wound complications not requiring reoperation, or wound complications requiring reoperation between groups. There was no statistically significant difference in tourniquet time between the two groups (51.8 ± 22.6 minutes IVV group versus 51.6 ± 22.8 minutes IOV group).
Discussion: In this study we were unable to demonstrate a significant difference in PJI between the IO vancomycin and IV vancomycin groups. Despite reviewing all UKA cases in a high volume academic medical center and 7 satellite hospitals over an 8 year time period, we were only able to identify a single UKA PJI. This highlights the low incidence of PJI in UKA. A much larger sample size will be required to determine the efficacy of IO vancomycin in UKA; however most institutions do not have a high number of UKA cases given that UKA compromises 8.45% of all knee arthroplasties. Furthermore, the use of IO vancomycin is not yet widespread or universal, which also limits the number of patients available for study. Further study of this topic will require a multi-institutional study of institutions utilizing IO vancomycin for UKA in order to power the study to detect a significant difference.
Significance/Clinical Relevance: While the use of IOV in UKA eliminates the logistical hurdles of IVV, there were no significant differences in PJI or wound complications between the IVV and IOV groups in this study. However, the incidence of PJI in UKA is quite low; therefore a larger sample size may be required to detect a significant difference. Next steps for this study include performing the same analysis using multi-institutional data in order to increase the sample size.