Non-Cefazolin Antibiotic Prophylaxis is Associated with Increased Rates of Acute Infectious and Medical Complications Following Total Shoulder Arthroplasty

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INTRODUCTION:
Preoperative antibiotic prophylaxis is routinely used during total shoulder arthroplasty (TSA) to reduce the risk of postoperative infection. However, there is no consensus on the ideal preoperative antibiotic regimen as various factors must be considered, including the antimicrobial spectrum, patient allergies, and drug side effects. Thus, the purpose of this study was to evaluate the relationship between prophylactic antibiotic regimens and acute postoperative readmissions, infections, and medical complications after TSA.

METHODS:
The Premiere national hospital database was used to identify patients over 18 years old who underwent primary elective TSA procedures from 2016 to 2020. The database was queried to identify preoperative antibiotic regimens containing cefazolin, clindamycin, and vancomycin, or a combination of two agents; patients receiving cefazolin monotherapy were used as the control group. Multivariate logistic regression was utilized to compare rates of postoperative complications within 90 days of surgery. Odds ratios and 95% confidence intervals were calculated. Significance was set at $p<0.05$.

RESULTS:
During the study period, a total of 139,032 patients underwent primary elective TSA. Cefazolin monotherapy was the most commonly used prophylactic antibiotic regimen (59.3% of patients), followed by vancomycin/cefazolin combination therapy (23.3%). Multivariate analysis demonstrated that both clindamycin and vancomycin monotherapy were associated with increased risk of periprosthetic joint infection (PJI) ($p<0.001$). Vancomycin monotherapy was also associated with increased risk of hospital readmission, medical complications, and surgical complications ($p = <0.001 – 0.02$). Patients receiving vancomycin as part of their prophylactic regimen experienced increased risk of postoperative acute kidney injury ($p = 0.017 – 0.001$).

DISCUSSION AND CONCLUSION: As compared to cefazolin monotherapy, vancomycin and clindamycin monotherapy were associated with increased risk of acute postoperative PJI. Vancomycin monotherapy was also associated with increased rates of postoperative medical and surgical complications. The results of this study support the use of prophylactic cefazolin monotherapy for patients undergoing primary TSA.