

Perioperative Antibiotic Prophylaxis in Total Joint Arthroplasty: A Single Dose Is as Effective as Multiple Doses

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Introduction: Recent surgical site infection prevention guidelines recommend that no additional prophylactic antibiotics should be administered after the surgical incision is closed in clean-contaminated procedures. Although there is ample evidence to support this recommendation in non-arthroplasty surgery, there is concern about extending these guidelines to surgeries with an implant such as total joint arthroplasty (TJA). The aim of this study is to review pertinent literature and compare the efficacy of a single-dose prophylactic antibiotics versus multiple doses of antibiotics in prevention of periprosthetic joint infection (PJI) in patients undergoing TJA.

Methods: A retrospective study of 20,682 primary TJAs from 2006-2014 was performed. Patients who received a single dose of prophylactic antibiotics (n=4,523) were compared with patients who received multiple doses of antibiotics (n=16,159). A previously validated PJI risk score was assigned to each patient. Patients who developed PJI within one year were identified and a multivariate logistic regression analysis was performed to control for potential confounders.

Results: The overall PJI rate was 0.60% (27/4523) in patients who received a single dose of antibiotic compared to 0.87% (142/16159) in patients receiving multiple doses of antibiotics. There was no difference in the overall PJI rate between patients who received a single dose and those who received multiple doses in both the univariate (OR 0.674, p=0.064) or the multivariate analyses (OR 0.708, p=0.107). Furthermore, multiple doses did not demonstrate any additional benefit for patients with a high preoperative risk of PJI (adjusted OR 0.981, p=0.943).

Conclusions: This study supports the notion that the administration of additional antibiotics following skin closure may not be required in patients undergoing primary TJA, regardless of their preoperative risk of PJI. The findings of this large retrospective study combined with the body of existing literature highlight the need for a randomized, prospective study to base current guidelines on.