

Antibiotic Administration for Open Reduction and Internal Fixation of Closed Ankle Fractures: Is One Preoperative Dose Enough?

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Purpose: Routine preoperative antibiotics in ankle fracture surgery appear to be the consensus among orthopaedic surgeons. However, there is a wide variability in postoperative antibiotic dosing regimens based on surgeon preference. In this study, we compare the rate of surgical site infection (SSI) in patients receiving 1 dose of preoperative antibiotics to patients who received more than 1 dose of antibiotics.

Methods: A single-center retrospective review of 850 patients with closed ankle fractures who underwent open reduction and internal fixation was performed. To detect patients with a possible SSI, we employed text-searching algorithms of post-discharge medical records. Demographic, injury pattern, and surgical data were collected for analysis. Risk factors for developing SSI were evaluated. Additionally, patients who received more than 1 antibiotic dose were compared to those who received only 1 antibiotic dose to identify whether a difference in infection rate occurred.

Results: Of the 850 total patients, 292 received only 1 dose of antibiotics preoperatively, while 534 patients received more than one antibiotic dose. Antibiotic dosage information was not available for 24 patients and were excluded from our analysis. The development of SSI was not statistically significant between patients who received 1 antibiotic dose (5.8%) and those who received more than 1 antibiotic dose (3.9%) ($P = 0.215$). There was no correlation between infection rate and the following risk factors: age, sex, inflammatory arthritis, malignancy, renal disease, diabetes mellitus, smoking status, alcohol use, Charlson comorbidity index, fracture site, syndesmotom involvement, anesthesia type, tourniquet time, and estimated blood loss. The following parameters were found to be associated with receiving more than 1 antibiotic dose: increased age, female sex, increased tourniquet time, and increased estimated blood loss.

Conclusion: We were unable to find any demographic, injury pattern, or surgical risk factors correlated to infection. Additionally, patients receiving 1 dose of antibiotics had infection rates that did not statistically differ from patients receiving more than 1 antibiotic dose. This study suggests that the routine use of postoperative antibiotics in uncomplicated elective open reduction and internal fixation ankle fracture operations may not influence the rate of SSI. Thus, a standard 1-time dose of preoperative antibiotics may yield sufficient antimicrobial prophylaxis.