The Effect of Vancomycin and Tobramycin Local Antibiotic Powder on Surgical Site Infections After Open Treatment of Fracture: A Retrospective Propensity-Matched Analysis

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Purpose: The aim of this study was to compare the effect of vancomycin/tobramycin local antibiotic powder (LAP) on surgical site infections (SSIs) after open treatment of fractures.

Methods: Retrospective review identified patients undergoing open procedures for fractures performed by a single surgeon before and after cessation of routine LAP use. Deep and superficial SSIs were documented in patients treated with and without LAP. Propensity score matching was performed to adjust for differences between cohorts.

Results: There were 652 open procedures for fracture performed by a single surgeon: LAP was used in 36.8% (114/310) of procedures before stopping its use, after which 342 procedures were performed without LAP. Comparison of all procedures performed with and without routine LAP use demonstrated no difference in infection rates, although there was a trend for the group without LAP to have fewer superficial SSIs (proportional difference [PD] –2.0%, 95% confidence interval [CI], –4.1% to 0.1%; P = 0.05) and more deep SSIs (PD 3.9%, 95% CI, –0.2% to 7.9%; P = 0.06). Prematch analysis demonstrated that LAP use was associated with external fixation (PD 8.5%, 95% CI, 1.6%-16.2%; P = 0.005), longer operative times (median difference 56.0 min, 95% CI, 39.0-74.0; P<0.0001), greater estimated blood loss (median difference 70.0, 95% CI, 50.0-100.0; P<0.0001), and no difference in superficial (PD 2.4%, 95% CI, –0.8% to 6.8%; P = 0.07) or deep SSIs (PD –1.6%, 95% CI, –6.2% to 4.1%; P = 0.54). After propensity matching (108 vs 108) to control for the above differences, the LAP group, compared with the no LAP group, had no difference in superficial SSIs and was less likely to have deep SSIs (PD –8.3%, 95% CI, –16.2% to –0.2%; P = 0.04).

Conclusion: The use of vancomycin and tobramycin LAP lowered the rate of deep SSIs after open treatment of fractures on propensity-matched analysis.