Evaluating the Efficacy of Topical Vancomycin Powder in the Treatment of Open Lower-Extremity Fractures

***Justin Vaida, MD**; Daniel A. Bravin, MD; Michelle Bramer, MD*
West Virginia University, Morgantown, WV, United States

Purpose: Despite standardized use of intravenous (IV) antibiotics, infection in open lower-extremity fractures remains high. Several examples in orthopaedic spine literature demonstrate both safety and efficacy in preventing postoperative infections when vancomycin powder is topically administered in the surgical wound. Therefore, vancomycin powder may provide a valuable adjunctive resource to improve patient care in the management of traumatic open fractures.

Methods: A retrospective review of 410 open lower-extremity fractures (subtrochanteric and distal) in adults from 2010-2015 at our institution were reviewed for development of deep infection (including species and sensitivity if present) and the development of unanticipated wound complications requiring intervention. 47 patients from 2016-2017 presenting with an open lower-extremity fracture were treated with vancomycin powder applied directly to the wound before closure in addition to the standard of care consistent with evidence-based literature (IV antibiotics with external fixator, intramedullary nail, etc). Wounds not primarily closed in the initial procedure received vancomycin powder then and at definitive closure. All patients were monitored per the treating surgeon's standard follow-up protocol and had follow-up of at least 3 months.

Results: 36 of 410 patients (8.78%) in the historical control group developed a deep infection compared to 4 of 47 patients (8.51%) in the vancomycin powder group (P = 0.966). The bacterial species cultured from the infected patients trended away from gram-positive organisms (55.56% of control infections vs 25% of intervention infections), although not achieving statistical significance (P = 0.246). There was a statistically significant increase in the incidence of unanticipated wound complications requiring intervention with the use of topical vancomycin powder (5.12% vs 12.77%) (P = 0.035, OR [odds ratio] 2.71).

Conclusion: The use of topical vancomycin powder does not appear to reduce the infection rate in open lower- extremity fractures, although the bacterial species cultured does appear to trend away from gram-positive organisms. Further, the use of vancomycin powder led to a statistically significant increase in unanticipated wound complications requiring intervention. Overall, the use of topical vancomycin powder does not appear to improve the management of open lower-extremity fractures.

See the meeting app for complete listing of authors' disclosure information.