

Infection Rates in Open Tibia Fractures with the Use of Intraoperative Topical Vancomycin/Tobramycin Powder

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Purpose: Postoperative infections have the potential to be a devastating consequence following open fractures. Time to intravenous antibiotics, timing and quality of initial debridement, and the severity of the soft-tissue injury have been shown to significantly impact infection rates. Administration of local antibiotics, with topically applied vancomycin and tobramycin powder, has been effective in spine and pelvic/acetabulum surgery with reduced rates of surgical site infection (SSI). However, there is a paucity of data related to topically applied antibiotics and open fractures. This study retrospectively compares postoperative infection rates in open tibia fractures in patients receiving topically applied vancomycin and tobramycin powder intraoperatively and those not receiving topically applied antibiotics.

Methods: During a 33-month period 90 patients with open tibia fractures were treated at a Level-I trauma center. 66 patients were treated with topically applied antibiotics at the open fracture site during initial debridements, while 24 patients did not receive localized antibiotic therapy. Fractures were classified according to the area of the tibia fracture (plateau, shaft, pilon) and the type of open fracture according to the Gustilo- Anderson classification. The outcome measure reviewed was deep infection requiring a formal irrigation and debridement in the operative theater.

Results: The overall rate of infection in open tibia fractures was found to be 18.9%. A majority of the infections occurred in Gustilo-Anderson type III open fractures yielding an infection rate of 22.5%. In type III fractures, those not receiving topical antibiotics (n = 14) had an infection rate of 42.9% compared to the treatment group’s (n = 57) infection rate of 17.5% (odds ratio = 3.53, confidence interval: 1.0-12.4; P < 0.05).

Conclusion: Topical administration of vancomycin and tobramycin powder into the wounds of Gustilo- Anderson type III open tibia fractures results in a statistical decrease in postoperative infection rates.

Infection rates (%)				
	Type I (n=9)	Type II (n=10)	Type III (n=71)	Total (n=90)
Overall infection number (%)	0 (0.0%)	1 (10.0%)	16 (22.5%)	17 (18.9%)
Topical antibiotics used				
Total number	2	7	57	66
Number of infections	0 (0.0%)	1 (14.3%)	10 (17.5%)	11 (16.7%)
No Topical antibiotics used				
Total number	7	3	14	24
Number of infections	0 (0.0%)	0 (0.0%)	6 (42.9%)	6 (25.0%)
Gustilo-Anderson Classification				

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