

Multi-Dose Prophylactic IV Antibiotics Do Not Lower the Risk of Surgical Site Infection (SSI) for Isolated Closed Ankle Fractures

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Purpose: The regimen of prophylactic intravenous (IV) antibiotics varies. The outpatient regimen for patients being discharged immediately after surgery (single preoperative IV dose, SD) is different from the inpatient regimen for patients remaining in the hospital (multi-dose 24 hours IV postoperative, MD). The purpose of our study was to compare the SSI rates in closed ankle fracture patients receiving either SD or MD.

Methods: We retrospectively reviewed the medical records of 314 patients with isolated closed ankle fractures from January 2012 to June 2016. Data analysis included demographics, risk factors for SSI (DM, BMI>30, immunosuppression, tobacco), IV antibiotic regimen, development of SSI, medical complications, length of hospital stay, and length of follow-up. We defined superficial SSI as those requiring local wound care and oral antibiotics, and deep SSI as those requiring return to operating room for debridement. A post hoc power analysis using a small/moderate effect size demonstrated sufficient power.

Results: 314 patients were included, with 99 in the SD group and 215 in the MD group. The overall SSI rate was 5.1% in the SD group versus 2.8% in the MD group (P = 0.312). The superficial SSI rate was 2.0% in the SD group versus 1.4% in the MD group. The deep SSI rate was 3.0% in the SD group versus 1.4% in the MD group.

Conclusion: The SSI rates in isolated closed ankle fractures receiving either SD or MD perioperative IV antibiotic prophylaxis were similar. Further studies should be considered to help guide standard of care for perioperative IV antibiotic prophylaxis.

Table 1. Descriptive Comparisons, Single Dose vs Multi-Dose (excluding oral abx); N = 314

	Single Dose Only n = 99	Multi-Dose n = 215	Statistical Significance
Gender (% male)	56.6%	43.3%	$\chi^2 = 4.816$ p = .028
Age Mean years (St. Dev)	44.2 (17.3)	47.7 (19.2)	p = .346
Smoking Status (%)			p = .807
Former	10.1%	10.7%	
Current	26.3%	29.4%	
Never	63.6%	59.8%	
Body Mass Index (%)			p = .882
<30	62.0%	62.9%	
≥30	38.0%	37.1%	
Diabetic (%)	9.1%	12.6%	p = .370
Length of Stay Mean days (St. Dev)	2.3 (2.3)	4.1 (3.7)	t = .5379 p < .001
Fraction Type Count(%)			p = .067
Medial malleolus	1 (1.0%)	8 (3.7%)	
Lateral malleolus	12 (12.2%)	26 (12.1%)	
Bimalleolar	28 (28.6%)	90 (42.1%)	
Trimalleolar	40 (40.8%)	69 (32.2%)	
Post malleolus	1 (1.0%)	3 (1.4%)	
Other	16 (16.3%)	18 (8.4%)	
Infection Rate Count (%)			p = .312
Overall Infection	5 (5.1%)	6 (2.8%)	
Superficial Infection	2 (2.0%)	3 (1.4%)	
Deep Infection	3 (3.0%)	3 (1.4%)	
Medical Complications (%)	7.2%	6.1%	p = .711

See pages 401 - 442 for financial disclosure information.