Paper - Annual Meeting

Paper Session: Pelvis and Acetabulum

Intrawound Antibiotic Powder in Acetabular Fracture Open Reduction and Internal Fixation Does Not Reduce Surgical Site Infections

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Purpose: The purpose of this study is to compare the risks of surgical site infection (SSI) and postoperative complications after acetabular fracture open reduction and internal fixation (ORIF) in patients receiving normal saline (NS) irrigation or NS irrigation and topical intrawound antibiotic powder.

Methods: We reviewed 789 acetabular fractures from 2010 to 2019 at our institution. Patients were separated into 3 cohorts: standard NS irrigation prior to closure, vancomycin powder (VP) (1 g vancomycin powder applied prior to closure after final irrigation), and vancomycin with tobramycin powder (VTP) (1 g powdered vancomycin + 1.2 g tobramycin powder applied prior to closure after final irrigation). Of the 789 fractures, 326 received NS irrigation and 463 received standard NS irrigation prior to topical antibiotic powder (294 vancomycin and 169 vancomycin/tobramycin). SSI was defined by positive cultures obtained during irrigation and debridement performed for persistent wound drainage, purulent drainage, or wound dehiscence. The mean follow-up duration was 18 months (range, 3-112 months). Patient demographics, comorbidities, injury characteristics, operative, and postoperative variables were compared between the 2 groups of patients. Multivariate logistic regression analysis was performed adjusting for covariates.

Results: There were 63 total SSIs (8.0%), 50 (6.3%) deep SSIs and 13 superficial SSIs (1.6%). The mean time from acetabular ORIF to SSI was 29.6 days (range, 3-204). The cohorts were similar with regard to most patient, injury, and operative characteristics. The NS group and antibiotic powder group had similar risks of all outcomes of interest, including seroma formation, wound dehiscence, total acute kidney infection (AKI), and RIFLE classification of AKI. There was no difference in the risk of total SSI (8.3% vs 7.8%, P = 0.796) or deep SSI (6.1% vs 6.5%, P = 0.643). This was confirmed by multivariate analysis adjusting for covariates (odds ratio [OR] = 0.927; 95% confidence interval [CI], 0.52-1.67; P = 0.796). Subanalysis comparing the NS group separately to the VP (OR = 1.00; 95% CI, 0.48-2.08; P = 0.545) and VTP (OR = 1.53; 95% CI, 0.73-3.20; P = 0.511) subgroups demonstrated no risk mitigation with either antibiotic powder. Of the SSI cases, there was no difference between the NS (60%) and VTP group (63%, P = 0.176) or VP only group (40%, P = 0.187) in the rate of gram-positive bacteria isolated. There was no difference between the NS (44%) and VP group (40%) (P = 1.00) or VTP group (69%) (P = 0.206) in rate of drug-resistant organisms cultured.

Conclusion: The addition of topical intrawound antibiotic powder, whether vancomycin alone or vancomycin/tobramycin, does not reduce the risk of SSI after acetabular fracture ORIF compared to standard normal saline irrigation alone.