

The Effect of Time to Irrigation on the Rate of Reoperation in Open Fractures: A Propensity Score-Based Analysis of the Fluid Lavage of Open Wounds (FLOW) Study
Herman Johal, MD; Daniel Axelrod, MD; Sheila Sprague, PhD; Brad Petrisor, MD; Sofia Bzovsky; Mohit Bhandari, MD, FRCSC, PhD
Hamilton General Hospital, Hamilton, ON, Canada

Purpose: This study was conducted to determine if a relationship exists between timing of wound irrigation and debridement (I+D) and subsequent reoperation rate for infection or healing complications within 1 year for patients with open extremity fractures requiring surgical treatment.

Methods: This was a secondary analysis of a randomized controlled trial. Propensity-adjusted regression allowed for a matched cohort and adjusted analysis within the study population to determine if time to I+D put patients independently at risk for reoperation, while controlling for injury, patient, and treatment-related confounding factors.

Results: For the unadjusted analysis, the proportion of patients requiring reoperation did not differ between early and late I+D groups. Prior to matching, the patients managed with early I+D had a higher proportion requiring reoperation for infection or healing complications (17.0% vs 12.8%; odds ratio [OR] 0.72, 95% confidence interval [CI] 0.54 to 0.94, $P = 0.02$). Similarly, when analyzed as a continuous variable each hour of delay was associated with a decrease in unplanned reoperation for infection or wound healing complication (OR 0.97, 95% CI 0.95 to 0.99, $P = 0.004$). However this does not account for selection bias of more severe injuries preferentially being treated earlier. In the propensity-matched cohort ($n = 764$), reoperation rates did not differ between early and late groups (16.1% vs 16.6%; OR 0.71, 95% CI 0.47 to 1.07, $P = 0.10$). When analyzing time as a continuous variable, there was still no association between time and unplanned reoperation (OR 0.99; 95% CI 0.97 to 1.02, $P = 0.71$).

Conclusion: When accounting for patient, injury, and treatment-related factors, delayed I+D for open fractures does not independently increase the risk of unplanned reoperation for infection or wound-related complications.