

Timing and Management of Surgical Site Infections in Patients With Open Fracture Wounds: A FLOW Cohort Secondary Analysis

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Purpose: Many studies report on the incidence or prevalence of fracture-related surgical site infections (SSIs) following open fractures; however, few studies report on their timing and management outcomes. To address this gap, we used data from the FLOW (Fluid Lavage in Open Wounds) trial to determine timing of diagnosis, management, and resolution of SSIs.

Methods: The FLOW trial was an international, blinded, randomized controlled trial that used a 2-by-3 factorial design to evaluate the effects of high versus low versus very low (gravity flow) irrigation pressures and soap versus normal saline solutions on reoperation rates among 2445 patients with an open fracture. All participants included in this analysis had an SSI after an open fracture. Participants were assigned to a group based on the type of SSI: (1) those who suffered a superficial SSI; and (2) those who had either a deep or organ/space SSI. Descriptive statistics characterized the type, timing, and management of each SSI.

Results: Of the 2445 participants in the FLOW trial, 325 (13.3%) had an SSI. Superficial SSIs were diagnosed significantly earlier (26.5 days, interquartile range [IQR] 12-48) than deep or organ/space SSIs (53 days, IQR 15-119). Of the 325 patients with SSIs, 174 required operative management and 151 were treated nonoperatively. For SSIs managed operatively, median time for infection resolution was 73 days (IQR 28-165) and on average, 1.73 surgeries (95% confidence interval [CI] 1.58-1.88) were needed during the 12-month follow-up. There were 24 cases whose SSIs were not resolved at the time of the final follow-up visit at 12 months.

Conclusion: Knowing that after an open fracture, superficial SSIs and deep or organ/space SSIs are normally diagnosed around 1 and 2 months, respectively, can help increase surgeons' and health-care professionals' awareness of potential infection during this period to allow earlier detection. In addition, knowing that around half of the SSIs underwent a reoperation because of infection, needed 2 procedures, and took almost 3 months to resolve will help orthopaedic surgeons to counsel their patients who develop an SSI after an open fracture.