

Infection and Nonunion Rates in Open Fractures: Description of Over 5750 Fractures From the FLOW and PREP-IT Studies

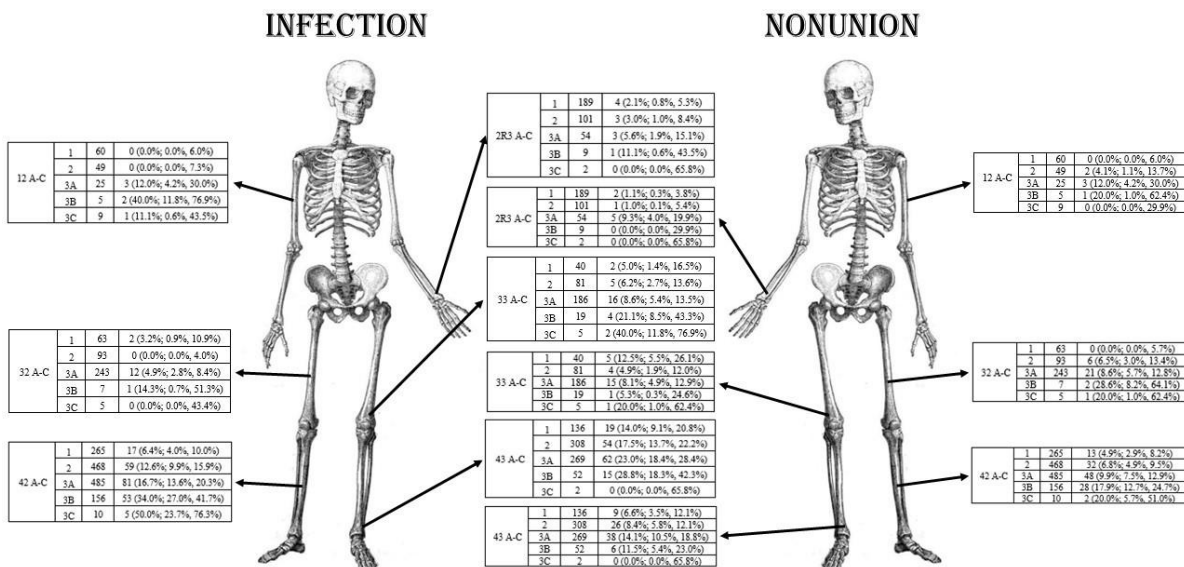
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Purpose: We sought to describe surgical site infection and delayed union/nonunion rates following open fractures in a contemporary series of patients followed prospectively and grouped by OTA/AO classification with further subtyping based on Gustilo-Anderson classification.

Methods: This was a secondary analysis of the FLOW, A-PREP, and PREPARE-Open studies. Surgical site infection rates, both superficial and deep/organ space, and delayed union/nonunion rates were calculated at 3, 6, and 12 months. 95% confidence intervals using the Wilson method were calculated.

Results: 5753 patients were included. Point estimates (95% confidence intervals) for cumulative surgical site infection rates at 12 months for Gustilo-Anderson Type 1, 2, 3A, 3B, and 3C were 5.1% (4.1-6.4%), 9.7% (8.5-11.0%), 13.7% (12.2-15.2%), 28.3% (23.9-33.1%), and 26.4% (16.4-39.6%), respectively. Delayed union/nonunion rates at 12 months were 3.1% (2.3-4.1%), 5.1% (4.2-6.1%), 7.8% (6.8-9.1%), 13.7% (10.6-17.7%), and 17.0% (9.2-29.2%), respectively. The figure shows how using the OTA/AO classification increases granularity for specific fracture regions. A companion website with point-and-click features detailing surgical site infection and delayed union/nonunion rates at 3, 6, and 12 months has been developed.

Conclusion: Open fractures are a substantial burden to patients, orthopaedic surgeons, and society. This is the largest cohort of open fractures ever reported on. The data are useful for prognosis, research study design, and informing public awareness/policy.



Column labels for each data table from left to right are OTA/AO classification, Gustilo-Anderson classification, number of fractures, and number of outcomes (%; 95%CI). For INFECTION the outcome is any type of surgical site infection (superficial and/or deep/organ space) within 12 months of injury. For NONUNION, the outcome is delayed union/nonunion within 12 months of injury.