

## Is Definitive Plate Fixation Overlap With External Fixator Pin Sites a Risk Factor for Infection in Pilon Fractures?

*Alex Dombrowsky BS; Eildar Abyar MD; Gerald McGwin PhD; Michael David Johnson MD*

University of Alabama at Birmingham, Birmingham, AL, United States

**Purpose:** Many orthopaedic surgeons advocate placing external fixator pin sites outside of the planned location of definitive implant due to concern for development of deep infection following internal fixation. The purpose of this study was to determine if overlap of definitive plate fixation with external fixator pin sites is a risk factor for infection in pilon fractures.

**Methods:** 146 patients at a Level-I trauma center between 2012 and 2018 undergoing a staged treatment with ankle-spanning external fixation followed by delayed open reduction and internal fixation were identified. Demographic, radiographic, and operative data were reviewed and the distance between the temporary external fixator pin sites and the definitive plate was measured. The primary outcome measure was the development of a deep postoperative infection, defined as an infection requiring a return to the operating room. Demographic and clinical characteristics were compared between patients with plate-pin site overlap to those without overlap using t and  $\chi^2$  tests for continuous and categorical variables, respectively.

**Results:** Overall, 22 patients (15%) developed deep wound infections. Overlap of definitive plate and external fixation pin site occurred in 58 ankles (40%). Of these, 7 (12%) developed deep wound infection compared to 15 patients (17%) without overlap ( $P = 0.484$ ). There was no significant difference in amount of overlap ( $P = 0.636$ ) or distance from plate to pin site ( $P = 0.607$ ) in patients with and without deep infection. Of the patients with overlap, the median amount of overlap was 32.5 mm (range, 1-127). In ankles without overlap, the median amount of separation was 40.5 mm (range, 1-160). Of the patients with deep infection, 11 (50%) occurred in patients with open fractures.

**Conclusion:** Overlap of definitive plate fixation with primary spanning external fixator pin sites is not a risk factor for development of deep infection in a staged treatment of high-energy pilon fractures.