

## **An Acute Fixation Protocol for High-Energy Tibial Pilon Fractures Decreases Time to Fixation and Lowers Operative Costs Without Affecting Wound Complications and Reoperations**

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**Purpose:** The purpose of this study was to determine if an acute fixation protocol for high-energy tibial pilon fractures increases the rate of postoperative wound complications and reoperations when compared to a historical delayed fixation protocol.

**Methods:** A retrospective review identified 147 patients with high-energy AO/OTA 43B and C pilon fractures. 35 patients were treated under an acute fixation protocol where fixation was performed acutely in the absence of blistering/necrosis, gross contamination, or compartment syndrome and 112 patients were treated under a delayed fixation protocol with routine external fixation and staged definitive fixation. Patients were compared by fixation protocol (acute vs delayed) regardless of the actual timing of open reduction and internal fixation (ORIF) for an intention-to-treat analysis. Outcomes included postoperative wound complications, reoperations, hospital length of stay (LOS), and implant costs.

**Results:** The 2 protocol groups did not differ in terms of age, gender, area deprivation index, American Society of Anesthesiologists (ASA) score, diabetes, polytrauma, follow-up length, AO/OTA type, presence of open fracture, surgical approach, or concurrent fibular ORIF. Under the acute ORIF protocol, 82.9% of patients received acute ORIF versus 15.2% of patients in the delayed protocol group. The 2 groups had no observed difference in the rate of wound complications (observed difference (OD) -5.7%, confidence interval (CI) -16.1 to 7.8%;  $P = 0.56$ ) or reoperations (OD -3.9%, CI -14.1 to 9.4%;  $P = 0.76$ ). The acute ORIF protocol group had a shorter LOS (OD -2.0, CI -4.0 to 0.0;  $P = 0.02$ ) and lower operative costs (OD \$-2709.27, CI -3582.02 to -1601.16;  $P < 0.01$ ). On multivariate analysis, wound complications were only associated with open fractures (odds ratio [OR] 3.36, CI 1.06 to 10.69;  $P = 0.04$ ) and an ASA >2 (OR 3.68, CI 1.07 to 12.67;  $P = 0.04$ ).

**Conclusion:** An acute fixation protocol for high-energy AO/OTA 43B and C pilon fractures is a viable treatment strategy in appropriately selected patients that decreases time to definitive fixation, lowers operative costs, and shortens hospital LOS without affecting the rate of wound complication and reoperations.