

Medial Plating of Pilon Fractures Is Predictive of Postoperative Soft-Tissue Complications

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Purpose: Pilon fractures are associated with significant soft-tissue injury and complications. The medial border of the distal tibia is subcutaneous and often the site of soft-tissue injury. The objective of this study was to assess the link between the application of distal tibial plates for pilon fracture fixation and soft-tissue complications requiring either nonoperative medical management or surgical management. We hypothesize that the application of medial plating for the fixation of pilon fractures is associated with an increased risk of overall soft-tissue complications and of those requiring subsequent surgical intervention.

Methods: This was a retrospective analysis of prospectively collected data on patients with a pilon fracture treated with open reduction and internal fixation at a Level I trauma center (2011-2017). Logistic regression was performed to determine the association between medial plating and (1) the incidence of soft-tissue complications and (2) the incidence of soft-tissue complications requiring surgical intervention. We controlled for other independent variables by introducing them into the regression model. Other independent variables introduced into the model included presence of open fracture, smoking status, diagnosis of diabetes, and radiological injury classification. Soft-tissue complications were defined as any documented wound or skin problems including hardware irritation resulting in hardware removal. We calculated the Cox and Snell r^2 as a measure of the percentage of the explained variation. Significance was set at $P < 0.05$.

Results: The study included 168 patients, 165 of whom had full data with an average follow-up of 14.5 months. The incidence of soft-tissue complications was 29% ($n = 48$), while 23% ($n = 39$) required surgical treatment. Predictors of soft-tissue complications were (1) presence of open fracture (odds ratio [OR] 4.750, 95% confidence interval [CI] 2.060-10.950, $P < 0.001$), (2) smoking (OR 2.866, 95% CI 1.224-6.713, $P = 0.015$), and (3) medial plating (OR 2.619, 95% CI 1.033-6.641, $P = 0.042$). The r^2 value was 0.18. Predictors of soft-tissue complications requiring surgical intervention were (1) presence of open fracture (OR 2.879, 95% CI 1.212-6.838, $P = 0.017$) and (2) medial plating (OR 4.167, 95% CI 1.401-12.389, $P = 0.010$). The r^2 value was 0.14. Both models controlled for other independent variables.

Conclusion: The use of medial plating and the presence of an open pilon fracture were associated with an increased odds ratio of any soft-tissue complications, as well as those requiring surgical treatment. Although smoking was associated with an increased OR of postoperative soft-tissue complications, it did not predict a higher reoperation rate. We recommend careful consideration of the value of using a distal tibia medial plate, particularly in the presence of an open pilon fracture.