Fixation of calcaneal fractures through a mini-incision technique
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Introduction/Purpose: The management of calcaneal fractures is a source of debate among orthopaedic surgeons due to a high risk of complications. The goals of surgical fixation are to restore the alignment and articular surface of the calcaneus. A popular fixation technique is open fixation as it provides the best visualization of fracture fragments. However, the extensive soft tissue disruption often associated with a larger incision places patients at risk for wound healing complications and infection. Due to the high risk of complications, non-operative treatment is often recommended. However, malunion of calcaneus fracture with non-operative treatment leads to predictable complications as well. Due to wound concerns, fixation using a mini-incision technique has emerged as an option for restoring calcaneal anatomy while minimizing wound complications.

Methods: From July 1, 2013 to December 31, 2015, 22 patients underwent surgical fixation of 25 displaced calcaneal fractures through a mini-incision technique. All patients were 18 years of age or older and had no history of prior fracture of the operative calcaneus. A chart review was performed to assess for complications defined as non-union, infection, or reoperation for any reason. To assess for restoration of calcaneal anatomy, preoperative and postoperative lateral radiographs were reviewed to assess the Angle of Gissane (normal: 130-145 degrees) and Bohler’s angle (normal: 20-40 degrees).

Results: Of the 22 patients (25 fractures), 68.2% (15/22) were male and average age was 41.86 years old. History of tobacco use was present in 81.8% (18/22), alcohol use in 40.9% (9/22), and illicit drug use in 31.8% (7/22). Sixty-eight percent (17/25) of fractures were tongue type and 32% (8/25) were depression type. Average Bohler’s angle (BA) was 13.2 preoperatively and 26.4 degrees postoperatively. Of the 17 calcanei with an abnormal BA preoperatively, 14 (82.4%) had a normal BA restored by surgery. The average postoperative time at final radiograph was 3.9 months. Twelve percent (3/25) of fractures had complications. One reoperation for removal of painful hardware, one reoperation due to non-union and infection, and one reoperation due to infection only.

Conclusion: Our results indicate the mini-incision technique is an effective option in restoring calcaneal anatomy while minimizing complications. The poor follow-up and multiple comorbidities present in patients in this study are likely common in the general calcaneal fracture population as well. These factors make techniques that reduce the risk for wound complications, such as the mini-incision, intriguing and potentially extremely useful. Further study comparing a mini-incision technique to more extensile approaches is needed.

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