Outcomes Following Nonoperative Treatment of Isolated Posterior Malleolar Ankle Fractures

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Introduction/Purpose: Ankle fractures are common injuries, however isolated posterior malleolar fractures are rare. Axial loading of the foot in hyper-plantarflexion is thought to be the most likely mechanism of injury for this fracture pattern. Management of isolated posterior malleolar fractures presents challenges for clinicians, and controversy exists over surgical indications. The literature to-date examining isolated posterior malleolar fractures is scarce and confined to case reports and small clinical series. Recommendations for surgical treatment are based largely on biomechanical studies and not clinical evidence. The purpose of this study was to assess outcomes in a series of patients, who were consecutively treated nonoperatively for isolated posterior malleolus ankle fractures.

Methods: Outcomes of patients with isolated posterior malleolus fractures who were all treated nonoperatively at two academic teaching hospitals were retrospectively reviewed. The size of the posterior malleolar fracture fragment was measured on lateral ankle radiographs, and clinical outcomes were evaluated using the American Academy of Orthopaedic Surgeons (AAOS) Foot and Ankle Survey. These scores were then compared to published normative data from the general population via independent t-tests. These same outcome measures were then correlated with the size of the posterior malleolar fragment via Spearman Rank Correlations.

Results: A total of 28 patients (17 male, 11 female) were retrospectively reviewed. The average size of the posterior malleolus fragment was 16.0% (Range: 2.0-59.5%) of the tibial plafond articular surface. The average follow-up duration was 2 years and 7 months. At follow-up, the average “Foot and Ankle Core Score” and “Shoe Comfort Scale Score” were 90 (±11.2) and 80.0 (±28.9), respectively. When these scores were compared to normative data from the general population, no significant differences were found (Foot and Ankle Core Score: p=0.234, Shoe Comfort Scale: p=0.276). There was also no significant association between these scores and the size of fracture fragment. At follow-up, no patients demonstrated signs of instability, dermatological complications, malalignment of the mortise or post-traumatic arthritis.

Conclusion: This is the largest study to date evaluating outcomes of isolated posterior malleolar fractures in patients treated nonoperatively. This series of 28 patients with isolated posterior malleolar fractures managed nonoperatively demonstrates short-to mid-term functional outcomes that are no different than reported normative data for the general population. These findings are consistent with previously reported clinical outcomes and suggest that nonoperative management is a viable treatment option for isolated posterior malleolar fractures.

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