

Minimally Invasive Surgical perative Outcomes Compared With Nonoperative Treatment of Displaced Intra-Articular Calcaneal Fractures (DIACFs): Early Results

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Purpose: This prospective cohort study compared minimally invasive surgery (MIS) and nonoperative treatment in displaced intra-articular calcaneal fracture (DIACF) up to 2 years. Our objective was to assess the impact of minimally invasive internal fixation of DIACFs in health outcomes up to 2 years post-injury compared to nonoperative management.

Methods: All calcaneal fractures were reviewed and the decision to treat was made by a multidisciplinary meeting. Operative treatment protocol involved sinus tarsi approach or percutaneous reduction and internal fixation. Nonoperative protocol involved symptomatic management with no attempt at closed reduction. All fractures were classified, and the MOXFQ (Manchester-Oxford Foot Questionnaire)/EQ-5D (EuroQol 5 Dimensions) scores were used to assess general and disease-specific outcomes, respectively.

Results: 79 patients were recruited at a Level-I major trauma center, between August 2014 and January 2019; 48 fractures in 46 patients (32 males, 14 females) were treated conservatively and 33 fractures in 33 patients (23 males, 10 female) were treated with MIS techniques. Conservative management was decided radiographically in 22 patients, 26 patients underwent CT and were grouped per Sanders as: 12 type 2, 6 type 3, and 3 type 4; 5 patients were excluded as extra-articular fractures were found on CT scanning. 33 patients underwent surgical reconstruction by a specialist foot and ankle team and underwent CT scanning prior to surgery and were classified by Sanders as follows: 12 grade 2, 14 grade 3, and 6 grade 4. At 2 years 3 nonoperatively treated patients required a subtalar fusion, 6 received subtalar injections and extended physiotherapy, for pain/subtalar arthritis. Within the surgical group 31 had sinus tarsi approach; 2 patients reported delayed healing, and another had a sensitive scar, 1 patient was diagnosed with peroneal irritation. No patient required revision surgery, subtler injection, extended physiotherapy, or subtalar joint arthrodesis at 2 years (n = 28). MOXFQ scores showed little variation between groups, in the domain of social integration, but pain and walking and standing had greater improvement in the operative group (P <0.05). Loss to follow-up was higher in the conservative group at 21.7%, 10 patients/feet versus 1 patient in the surgical group, possibly overestimating the need for intervention in the nonoperative group.

Conclusion: This study highlights that both nonoperative and operative treatments are valid. MIS surgical techniques are safe with lower rates of surgical complications than open techniques at 2 years and better pain and functional outcomes than conservative treatment in more severe injury patterns.