

Long-Term (15-20 Years) Results of Displaced Intra-Articular Calcaneal Fractures Treated With Closed Reduction and Percutaneous Screw Fixation

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Purpose: Over the last 20 years, minimally invasive surgery using percutaneous screw fixation (PSF) has been used more frequently in treatment of displaced intra-articular calcaneal fractures (DIACFs). In a previous study conducted by our group, treatment of DIACF with PSF has shown good results on functional outcomes and low complication rates with 5-10 years follow-up. The purpose of this study was to assess the long-term postoperative outcomes of mobility, foot function, stability, pain, and patient satisfaction after 15-20 years and to compare it with the outcomes after 5-10 years.

Methods: All patients had a DIACF and underwent PSF according to the method of Forgon and Zadavec, between 1998 and 2006. Functional outcome, range of motion, and change in footwear were evaluated with the use of the American Orthopaedic Foot & Ankle Society (AOFAS) score and the Maryland Foot Score (MFS). All patients completed a general health status form (Short Form-36 [SF-36]) and a visual analog scale (VAS) for patient satisfaction. Anatomical restoration was assessed based on pre- and postoperative radiographic images.

Results: The same cohort of patients treated with PSF (n = 69) as in the previous study were reviewed. Patients with open fractures, who were deceased, or <18 years of age at trauma were excluded. A total of 47 patients were asked to fill out the questionnaires. Of these patients, 27 with 29 DIACFs responded (58%). 19 were males; mean age at trauma was 45 years. Seven were classified as Sanders type 2, 14 as Sanders type 3, and 8 as Sanders type 4. The mean pre- and post-Bohler angle was 10° and 26°. With an average follow-up of 16 years, mean AOFAS, MFS, SF-36, and VAS scores, respectively, of 76, 74, 63, and 7.7 points were recorded. In comparison to results 5-10 years postoperatively in the same study population, we recorded an average decline on AOFAS and MFS score, respectively, of 8 and 11 points. Patient satisfaction decreased by 0.1 point. Patients reported general health decrease of 14 points.

Conclusion: The long-term results of this study show comparable functional outcome results as after 5-10 years follow-up. The slight decrease on functional outcome and mobility can be subject to patients' increasing age and ongoing subtalar arthritis. Judging from the reported scores, patients described their level of function as essentially normal.