Open Reduction and Internal Fixation Compared With Primary Subtalar Arthrodesis for Treatment of Displaced Intraarticular Calcaneal Fractures

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INTRODUCTION: The initial management of displaced intraarticular calcaneus fractures (DIACFs) is a difficult problem in orthopaedics. The results of open reduction internal fixation (ORIF) affords bony restoration of the calcaneus, however, despite anatomical reduction, a large subset of patients require delayed subtalar arthrodesis with inferior outcomes. Primary SubTalar Arthrodesis (PSTA) may allow patients to return to function faster than ORIF. The purpose of this study is to review patient-centered and radiographic outcomes of ORIF alone versus PSTA for DIACFs.

METHODS: A retrospective review of 75 operatively treated DIACFs treated by 1 of 6 fellowship-trained orthopedic trauma surgeons at our level 1 trauma center between 2013-2019 was conducted. Patients were classified into 2 groups for the primary analysis: ORIF and PSTA. Inclusion criteria included: operatively treated DIACF, OTA 82B or 82C classification, age >18 years. Exclusion criteria included: ipsilateral distal tibia, talus, navicular, or forefoot fractures, bilateral DIACFs, OTA 82A classification, and non-orthopaedic trauma trained definitive surgical intervention. Demographic data, injury, and surgical characteristics were collected. Radiographic measurements, healing or fusion, and development of post-traumatic arthritis were analyzed pre-operaively, post-operatively, and at final follow-up. Complications and need for additional surgeries were also noted.

RESULTS: In total, there were 75 DIACFs. (ORIF n=38, PSTA n=37). The population was 43 male and 30 female (median age=39, 19-82). The median body mass index (BMI) was 25.9 (17.8-46.9) and 29 (38.7%) were smokers. 21 fractures were documented as Sanders IIIAB (28%, ORIF n= 11, PSTA n=10) and 17 fractures (22.7%, ORIF n=10, PSTA n=7) were documented as Sanders IIIAC. 16 (21.3%, ORIF n=7, PSTA n=9) were open fractures. ORIF patients were more likely to have symptomatic arthritis present at final follow-up (ORIF n=10, 26.3%, PSTA n=2, 5.4% p=0.0067). 7 patients required reoperation within 2 years of surgery (ORIF n=3, 7.9%, PSTA n=4, 10.8%).

DISCUSSION AND CONCLUSION: DIACFs are complex traumatic injuries that may require delayed subtalar arthrodesis due to symptomatic post-traumatic arthritis. PSTA is a viable primary treatment option that avoids delayed fusion.