Cannulated screws versus Plates for Internal fixation of Intra-articular Calcaneal Fractures: A Meta-Analysis

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INTRODUCTION: There are different internal fixation methods for displaced intra-articular calcaneal fractures (DIACFs). The 2 most commonly used are open reduction internal fixation (ORIF) by plate and percutaneous fixation by cannulated screws. ORIF has long been the conventional and gold standard protocol in intra-articular calcaneal fractures surgeries. However, percutaneous fixation by cannulated screws (CSF) is now gaining ground as an alternative solution to reduce operative time and soft tissue complications. Until now there is no strict recommendation of one method over the other.

METHODS: The authors searched for all publications on DIACFs fixed with cannulated screws or plates in the following electronic databases: Pubmed, Cochrane and LILACS. Only randomized controlled studies were included. The primary outcomes were American Orthopedic Foot and Ankle Society score (AOFAS), improvement of Bohler's angle, improvement of Gissane's angle, the width and length of the calcaneus and wound complications. Outcomes were reported as the standard mean difference (SMD) or relative risk (RR) with the 95% confidence interval (CI). The review was registered at Orthopedic Surgery Department, Faculty of Medicine, Cairo University. It was also registered on **PROSPERO** (International Prospective Register of Systematic Reviews) website, Center for Reviews and Dissemination, of York with a registration number (PROSPERO 2022: CRD42022298097). Universitv and а URL: https://www.crd.york.ac.uk/prospero/display record.php?ID=CRD42022298097

RESULTS: Six randomized controlled studies met our inclusion criteria, and a total of 857 patients were involved. There was no statistically significant difference between the cannulated screw fixation group and the plate fixation group in terms of excellent and good AOFAS scores, improvement of Bohler's angle, or the width of the calcaneus. Plate fixation had better improvement of Gissane's angle than cannulated screws fixation. Compared with plate fixation, CSF showed better restoration of calcaneal length, a reduction in the duration of surgery and rate of wound complications. DISCUSSION AND CONCLUSION:

Cannulated screw fixation and plate fixation have similar fixation effectiveness and functional outcomes in the <u>treatment</u> of displaced intra-articular <u>calcaneus fractures</u>. The cannulated screws are superior to ORIF using plates in terms of shorter operative time and wound complications with similar functional outcomes. Further studies are required to increase the impact of the metaanalysis.