

# Internal Fixation of Isolated, Closed SERIV Ankle Fractures was Not Associated with a Greater Odds of Secondary Ankle Surgery than Casting in Adults with Diabetes.

Gabriela Pinzon-Betancourt<sup>1</sup>, Jacob A. Becerra<sup>1</sup>, Akhil Reddy<sup>1</sup>, Vivek Satish<sup>1</sup>, Joseph T. Patterson<sup>1</sup>

<sup>1</sup>Keck School of Medicine of the University of Southern California

Disclosures: JTP reports research support from AO North America, committee membership with the Orthopaedic Trauma Association, and consulting fees from Johnson & Johnson. The other authors have nothing relevant to disclose.

**INTRODUCTION:** Diabetes predicts complications after open reduction internal fixation (ORIF) of unstable supination external rotation type IV (SERIV) ankle fractures in adults. Some surgeons elect to treat SERIV fractures in diabetic adults with casting to avoid life- and limb- threatening complications associated with ORIF. We hypothesize that ORIF of SERIV ankle fractures is associated with a greater odds of secondary ankle surgery than casting in adults with diabetes.

**METHODS:** 167 adults with presenting to one Level 1 trauma center with ankle fractures from 12/31/2015 to 06/30/2022 were retrospectively identified from a consult registry. 167 patients with diabetes were included after radiographic confirmation of isolated, closed, SERIV ankle fracture treated with ORIF or casting. The primary outcome was secondary ankle surgery. The odds-ratio (OR) of secondary ankle surgery assessed by multivariable logistic regression considering age, sex, language, ethnicity, housing status, employment status, substance use, insulin dependence, HbA1c, Charlson co-morbidity index, fracture characteristics, delay to presentation, and days to surgery.

**RESULTS:** Median follow-up was 150 days (IQR 103-230). Demographics and comorbid conditions were similar between groups. Secondary ankle surgery was not associated with ORIF versus cast treatment (OR=39.1, 95% confidence interval (CI) [4.1e-150, N/A], p=0.99). Increasing was associated with lower odds of secondary ankle surgery (OR=-0.14, 95% CI [0.78, 0.96], p=0.007). Internal fixation was not associated with greater OR of reoperation

**CONCLUSION:** Internal fixation of isolated, closed SERIV ankle fractures was not associated with a greater odds of secondary ankle surgery than casting in adults with diabetes.

**SIGNIFICANCE/CLINICAL RELEVANCE:** Patients with diabetes mellitus who undergo operative fixation of unstable ankle fractures may be able to adequately heal their fractures and not require reoperation. Nonoperative management should be considered on a case-by-case basis and not by presence of diabetes mellitus alone.