

## **Severely Obese Patients Undergoing Ankle Arthrodesis Experience Higher Complication and Failure Rates**

Nicolas P Kuttner<sup>1</sup>, Aaron Owen, Daniel B Ryssman<sup>2</sup>, Harold B Kitaoka<sup>2</sup>, Norman S Turner<sup>3</sup>

<sup>1</sup>Orthopedic Surgery, Ohio State University, <sup>2</sup>Mayo Clinic, <sup>3</sup>Mayo Grad School of Medicine

**INTRODUCTION:** Tibiotalar arthrodesis (TTA) is a common operation for end-stage ankle arthritis. Elevated body mass index (BMI) is believed to contribute to complications including nonunion, infection, reoperation, and readmission following TTA. Previous studies involved the use of national registries or small, underpowered cohorts. The purpose of this study was to determine the effects of elevated BMI on the rates of nonunion and complications following TTA with a large cohort from a single academic institution.

**METHODS:** A retrospective study was performed, identifying 514 patients (527 ankles) who underwent primary TTA from 2005-2017. Patients were stratified by BMI according to the World Health Organization classification. A reference group of 203 patients (208 ankles) included normal weight or mildly overweight patients (BMI 18.5 to <30). Ankle radiographs were evaluated to determine time to union or presence of nonunion. Outcomes including revision TTA, reoperations including implant removal, subsequent adjacent joint arthrodesis, infection, and readmission were studied. The data was analyzed using Pearson Chi-square and odds ratios for categorical variables. ANOVA and Kaplan-Meier estimation assessed continuous variables, and time to event outcomes respectively. The mean follow-up for the cohort was 34.3 months.

**RESULTS:** Patients with Obesity Class III had elevated risk of complications compared to normal weight patients including nonunion (OR 3.96,  $p=0.002$ ), revision (OR 3.69,  $p=0.03$ ), superficial infection (OR 9.36,  $p=0.002$ ), and readmission (OR 10.90,  $p=0.01$ ). There was no difference in the rate of reoperation ( $p=0.448$ ), symptomatic implant removal ( $p=0.805$ ), adjacent joint arthrodesis ( $p=0.353$ ), or deep infection ( $p=0.507$ ).

**DISCUSSION AND CONCLUSION:** Patients with mild and moderate obesity had successful outcomes following TTA, and were no different than normal or mildly overweight patients. We found increased rates of nonunion, revision, superficial infection, and readmission in patients with severe obesity (Class III). This study provides useful information to guide risk stratification and counseling of patients prior to TTA.