Preoperative Use of Glucagon-like Peptide-1 Receptor Agonists Is Not Protective Against Pseudoarthrosis Following Small Joint Hand Arthrodesis: A Propensity-Matched Analysis

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INTRODUCTION: First approved for use in 2005, glucagon-like peptide-1 receptor agonists (GLP-1 RAs) have become increasingly utilized for the management of Type 2 diabetes mellitus and obesity in recent years.[1] Additionally, recent studies focusing on GLP-1 RA use within the orthopedic patient population have shown positive effects on bone metabolism and pseudoarthrosis following fusion surgery.[2,3] There is, however, little evidence regarding the preoperative use of GLP-1 RAs in patients who underwent arthrodesis in the upper extremity. Thus, the objective of this study was to examine the effect of preoperative GLP-1 RA use in patients who underwent small joint arthrodesis of the hand.

METHODS: This study utilized a global, federated health research network (TriNetX) to identify patients aged > 18 years that underwent arthrodesis of the interphalangeal (IP) or metacarpophalangeal (MCP) joint between April 30, 2005 and July 23, 2025. The experimental group consisted of patients that were prescribed a GLP-1 RA within one year prior to surgery; the control group had no previous GLP-1 RA exposure. Once the two cohorts were established, one-to-one propensity matching was performed to balance the groups based on baseline demographic characteristics and medical comorbidities, including Type 2 diabetes mellitus, hypertension, chronic kidney disease, nicotine dependence, BMI, hemoglobin A1c, and estimated glomerular filtration rate. Rates of pseudoarthrosis and postoperative infection were assessed at one year following index procedure using relative risk (RR) and 95% confidence intervals (CI). P-value < 0.05 denotes statistical significance.

RESULTS SECTION: This analysis returned 237 matched pairs. After balancing, the GLP-1 receptor agonist exposed group consisted of 68.4% female and 65.0% White patients. There was no difference between the two groups in pseudoarthrosis at one year (RR 0.700, 95% CI (0.362, 1.353)). Further, similar rates of postoperative infection were observed (RR 1, 95% CI (0.424, 2.358)).

DISCUSSION: Preoperative GLP-1 receptor agonist use was not associated with decreased rates of pseudoarthrosis in patients who underwent IP or MCP arthrodesis. These results differ from previous studies in foot and ankle fusion and may suggest pseudoarthrosis is attributable to local biomechanical factors and surgical technique rather than systemic metabolic status.[3] Regardless, GLP-1 RAs do not appear to confer additional risk or benefit in this patient population and thus do not necessitate adjustment of preoperative protocols prior to small joint arthrodesis.

SIGNIFICANCE/CLINICAL RELEVANCE: Preoperative GLP-1 receptor agonist use does not appear to reduce nonunion rates nor increase infection rates following IP or MCP joint arthrodesis.

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