

Patients Receiving GLP-1 agonists Have Reduced Odds of Pseudoarthrosis Following Lumbar Decompression and Fusion

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INTRODUCTION:

In the past two decades, the frequency of lumbar spine decompression and fusion surgeries has risen exponentially. This increase has coincided with a rise in postoperative complications, notably pseudoarthrosis—a failure in spinal fusion manifesting as recurring pain and mechanical instability. The association between glucagon-like peptide-1 (GLP-1) agonist use and complications following lumbar decompression and fusion has yet to be explored. The goal of this study is to examine the association between GLP-1 agonist usage and the incidence of pseudoarthrosis, adjacent segment disease, revision surgery, and other perioperative complications following lumbar decompression and fusion surgery.

METHODS:

TriNetX, a global health research network, was queried from 2004-2024 for patients undergoing open lumbar fusion using a posterior/transforaminal (CPT 22633, 22630, 22612), anterior (CPT 22558), or lateral approach (CPT 22533) with a decompression lumbar laminectomy or laminotomy (CPT 63047, 63030) and who had documented GLP-1 agonist usage within 1-year post-operation. Analysis included chi-squared tests with a control cohort propensity score matched for age, sex, race, smoking, diabetes, BMI, and uremia who did not have post-operative GLP-1 agonist usage. Outcomes of interest were DVT, emergency department (ED) visits, inpatient hospitalization, opioid abuse, PE, sepsis, surgical site infection, wound complications within 90 days, adjacent segment disease, implant failure, pseudoarthrosis, and revision within 2 years. Subgroup analysis based on surgical approach was conducted.

RESULTS:

A total of 1,266 patients who received GLP-1 were compared to propensity matched controls. After matching, patients were 62.7 ± 10 years old, 39% male, 70% white, 85% diabetic, and 67% obese. GLP-1 agonist use within 1-year post-operation was significantly associated with reduced odds of ED visits (OR 0.78, CI 0.62-0.97), inpatient hospitalization (OR 0.29, CI 0.24-0.34), sepsis (OR 0.49, CI 0.27-0.89), post-operative SSI (OR 0.42, CI 0.27-0.65), wound complications (OR 0.50, CI 0.33-0.77) within 90 days, and pseudoarthrosis (OR 0.46, CI 0.38-0.56) within 2 years post-operation. In the posterior approach subcohort, GLP-1 agonist use was significantly associated with reduced odds of ED visits (OR 0.78, CI 0.62-0.98), inpatient hospitalization (OR 0.27, CI 0.23-0.32), post-operative SSI (OR 0.43, CI 0.27-0.66), wound complications (OR 0.60, CI 0.39-0.93) within 90 days, and pseudoarthrosis (OR 0.51, CI 0.42-0.62) within 2 years post-operation. In the anterior approach subcohort, GLP-1 agonist use was significantly associated with reduced odds of inpatient hospitalization (OR 0.30, CI 0.17-0.53) within 90 days post-operation. The study population was insufficient to assess lateral approaches independently.

DISCUSSION AND CONCLUSION:

Lumbar decompression and fusion surgery patients prescribed GLP-1 agonists in the post-operative period experienced lower rates of pseudoarthrosis, postoperative infections, and overall hospitalizations compared to those who did not receive GLP-1 agonists. GLP-1 agonists may offer a therapeutic benefit in improving outcomes in this patient population, and further prospective research is needed to validate these findings and investigate the underlying mechanisms.

