Patients Taking GLP-1 Agonists for Weight-Loss Prior to Posterior Lumbar Decompression and Fusion Have Similar Surgical and Patient-Reported Outcomes

Gregorio Baek, BS[1], Joydeep Baidya, BS[1], Jonathan Dalton, MD[1], Adam Fano, MD[1], Robert J. Oris, BS[1], Rachel Huang, BA[1], Chloe Herczeg, MS[1], Jarod Olson, BS[1], Mitchell Ng, MD[1], Joshua Mathew, BS[1], Yasmine Eichbaum, BA[1], Yulia Lee, BA[1], Morgan Hitchner, BS[1], William A Green, MEd, BS[1], Theresa Chua, BS[1], Matthew Titus, BS[1], Amar Chinni, BS[1], Jose Canseco, MD, PhD[1], Alan Hilibrand, MD[1], Alexander Vaccaro, MD, PhD, MBA[1], Christopher Kepler, MD, MBA[1], Gregory Schroeder, MD[1]

[1]Department of Orthopaedic Surgery, Rothman Orthopaedic Institute at Thomas Jefferson University Hospital, Philadelphia, PA 19107

Email of Presenting Author: gbaekortho@gmail.com

Author Disclosures: GB: None. JB: None. JD: None. AF: None. RJO: None. RH: None. CH: None. JO: None. MN: Stryker. Inc. (paid consultant), Johnson & Johnson Ethicon Inc. (paid consultant), CurvaFix Inc. (paid consultant), Pacira BioSciences Inc. (paid consultant), Sage Products Inc. (paid consultant), Alafair Biosciences Inc. (paid consultant), Next Science LLC (paid consultant), Bonutti Technologies Inc. (paid consultant), Hippocrates Opportunities Fund LLC (paid consultant), and Ferghana Partners Inc. (paid consultant). JM: None. YE: None. YL: None. MH: None. WG: None. TC: None. MT: None. AC: None. JC: Accelus – research support, Cervical Spine Research Society – board or committee member, PathKeeper Surgical – stock or stock options; unpaid consultant, Wolters Kluwer Health – Lippincott Williams & Wilkins – editorial or governing board. ASH: Biomet – IP royalties, CTL America – IP royalties, Paradigm spine – stock or stock options. ARV: Receives royalties from Stryker, Globus, Medtronic, Atlas Spine, Alphatech Spine, SpineWave, Spinal Elements, Curiteva, Elsevier, Jaypee, Stout Medical, Taylor Francis/Hodder and Stoughton, Wolters Kluwer, and Wheel House Medical, and Thieme; has stock or stock options in Accelus, Advanced Spinal Intellectual Properties, Atlas, Avaz Surgical, AVKN Patient Driven Care, Cytonics, Deep Health, Dimension Orthotics LLC, Electocore, Flagship Surgical, FlowPharma, Rothman Institute and Related Properties, Globus, Harvard MedTech, Innovative Surgical Design, Jushi (Haywood), Orthobullets, Parvizi Surgical Innovation, Progressive Spinal Technologies, Sentryx, Stout Medical, See All AI, and ViewFi Health; is a consultant for Curiteva, Medcura, Stryker, Globus, Spinal Elements, Accelus, Wheel House Medical, and Ferring Pharmaceutical; Serves on Scientific Advisory Board / Board of Directors / Committee for National Spine Health Foundation (NSHF), Sentryx, and Accelus; and is a member in good standing/independent contractor for AO Spine. CKK: Clinical Spine Surgery – editorial or governing board, Inion – IP royalties, Regeneration Technologies, Inc. – research support. GDS: Advance Medical – paid consultant, AOSpine – board or committee member, AOSpine – other financial or material support, Bioventus – paid consultant, Cerapedics – research support, Cervical Spine Research Society – board or committee member, DePuy, A Johnson & Johnson Company – research support, Medtronic Sofamor Danek – research support, Surgalign – paid consultant, Wolters Kluwer Health – Lippincott Williams & Wilkins – editorial or governing board.

INTRODUCTION: Although glucagon-like peptide-1 receptor agonists (GRAs) are commonly used for diabetes mellitus, they are also increasingly used for weight loss. However, the impact of these medications taken solely for weight-loss on surgical outcomes has been minimally studied. Therefore, the purpose of this study was to compare postoperative outcomes after lumbar fusion between patients taking GRAs for weight loss versus patients not taking these medications.

METHODS: All adults without diabetes mellitus undergoing posterolateral decompression and fusion (PLDF) or transforaminal lumbar interbody fusion (TLIF) (2017-2023) taking GRAs were identified. Patients undergoing fusion for revision/trauma/malignancy/infection were excluded. Demographic/surgical variables and patient-reported outcomes were compared between groups.

RESULTS: 196 patients were identified (25 [12.8%] with GRA use). 89 (45.4%) of these patients were male and 107 (54.6%) of patients were female. GRA patients were younger (55.5 vs. 65.3 years, $p<0.001$), had higher body mass index (BMI) (34.9 vs. 31.0, $p=0.003$), and less commonly had Medicare insurance (4% vs. 40.4%, $p=0.001$). GRA patients had fewer levels fused (1.08 vs. 1.88, $p<0.001$) and shorter length of stay (LOS) (2.10 vs. 3.13 days, $p<0.001$). All other outcomes were similar between groups. 1-year postoperative Oswestry Disability Index (ODI) was better in the GRA group (10.0 vs. 22.2, $p=0.014$). Similarly, GRA patients experienced greater improvement in VAS Back at 3-months (-5.75 vs. -3.25, $p<0.001$) and 6-months (-5.75 vs. -3.12, $p=0.006$), and greater improvement in ODI at 6-months (-44.40 vs. -22.20, $p=0.009$) and 1-year (-44.40 vs. -23.49, $p=0.033$). Multivariable regression demonstrated that LOS ($b = 2.60$, $p=0.003$) and preoperative ODI ($b = 0.41$, 95% CI 0.26-0.55, $p<0.001$) were independent predictors of 1-year ODI.

CONCLUSION: Taking GRAs for weight-loss did not impact safety or postoperative outcomes after lumbar fusion. Although bivariate analysis indicated that GRAs may be associated with superior ODI improvement at 1-year, multivariable regression showed this as independently attributable only to baseline ODI and LOS. Further research is needed to contextualize these findings.

CLINICAL RELEVANCE: Taking GRAs for weight loss does not increase the risk of adverse outcomes after elective lumbar fusion.