

Association of GLP-1 Agonists on Hip Fractures in a Real-World Cohort

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Purpose: Glucagon-like peptide (GLP)-1 agonists such as semaglutide have exploded in popularity to help control patients' A1C in those afflicted with type 2 diabetes mellitus (T2DM). Our purpose was to evaluate if GLP-1 agonists had an impact on hip fracture incidence relative to other diabetic drugs.

Methods: We utilized the TriNetX database to identify 2 cohorts of patients between 2017-2023. The first cohort consists of patients diagnosed with T2DM who were initially and only prescribed GLP-1 agonists. The second cohort consists of patients diagnosed with T2DM and who were prescribed any other diabetes drug excluding GLP-1 agonists. Outcomes included a group that consisted of subtrochanteric, pertrochanteric, and intertrochanteric fractures along with a second group with the outcome of femoral neck fracture. Outcomes were analyzed for up to 5 years after patients started taking diabetic drugs.

Results: Propensity score matching was run to balance the baseline characteristics of each cohort and 37,099 were identified in Cohort #1 and 37,013 in Cohort #2 after matching. Cohorts were matched according to age, gender, race, and body mass index, along with diagnosis of chronic kidney disease, vitamin D deficiency, and osteoporosis. The GLP-1 agonist group (Cohort #1) was found to have a lower incidence of subtrochanteric, intertrochanteric, and pertrochanteric fractures when compared to the non-GLP-1 group (Cohort #2) (0.032% vs 0.373%) ($P < 0.0001$) with a risk ratio of 11.525 (95% confidence interval [CI], 6.391-20.786). Additionally, for femoral neck fracture incidence, the GLP-1 group had a lower incidence compared to the non-GLP group (0.032% vs 0.234%) ($P < 0.0001$) with a risk ratio of 0.138 (95% CI, 0.075-0.252).

Conclusion: This study demonstrates that patients taking GLP-1 agonists after diagnosis of T2DM had an extremely statistically significant reduction in subtrochanteric, intertrochanteric, and pertrochanteric fracture incidence compared to patients taking other diabetes medications not including GLP-1 agonists. While this is a limited database study that does not delve into the specifics of each patient, this indicates that GLP-1 agonists may have a protective effect, which is consistent with previous studies that show that GLP-1 agonists have a positive influence on bone formation and density.