



Paradoxical Increase In Cubital Tunnel Syndrome Risk Among GLP-1 Agonist Users

Despite Obesity As An Independent Risk Factor

Shelley R. Edwards MD PhD, Lily Rumph BS, Fernando A. Herrera MD
Medical University of South Carolina, Charleston, SC, USA

OBJECTIVES

Assess the impact of poor metabolic health on the risk of cubital tunnel syndrome.

Clarify the effect of aggressive management of metabolic disease by GLP-1 agonists on the risk of developing cubital tunnel syndrome.

INTRODUCTION

- Cubital tunnel syndrome (CuTS) is the second most common compressive neuropathy of the upper extremity, with a reported incidence of approximately 30 per 100,000 person-years.¹
- CuTS may result in significant morbidity including: intrinsic muscle atrophy, debilitating pain, and hand contractures, significantly impairing fine motor skills and decreasing overall quality of life.²
- The development of compressive neuropathies has been increasingly linked to systemic metabolic disease.^{3,4}
- While diabetes is a well-established independent risk factor for compressive neuropathies, the relationship between body mass index (BMI) and CuTS is more complex.^{3,4}
- Glucagon-like peptide-1 receptor agonists (GLP-1 RAs) are at the forefront of contemporary weight-loss therapy, although their impact on peripheral compressive neuropathies remains poorly defined.

METHODS

Data Query:

- Retrospective data from Epic Cosmos
- Adult patients from 2005-2025 with or without CuTS (ICD-10 G56.2x)
- Stratified by body-mass index, diabetes status/type (T1DM vs T2DM), and treatment with GLP-1 RAs
- Subgroup analysis controlling for GLP-1 RA use prior to CuTS diagnosis
- Quantified risk across strata with odds ratio (OR), 95% confidence interval

Statistical Analysis:

- Group comparisons were made using chi-square tests with Yates' correction.
- Odds ratios were reported with 95% CI calculated using the Woolf logit method

RESULTS

Diagnosis / Procedure	ICD-10 / CPT Codes	N (Total)	N (Diabetes)	N (No Diabetes)
Cubital tunnel syndrome	G56.2, G56.21, G56.22, G56.23, G56.20	331299	142112	149148
Body Mass Index (BMI)				
<19.9	Z68.1	3198207	633704	2564503
20.0–24.9	Z68.20–Z68.24	7722496	1342212	6380284
25–29.9	Z68.25–Z68.29	13385130	3112048	10273082
Obesity Class I	Z68.30–Z68.34	17114396	5210444	11903952
Class II	Z68.35–Z68.39	11811708	4248456	7563252
Class III	Z68.4*, Z68.41, Z68.42, Z68.43, Z68.44, Z68.45	10418495	4010750	6405745
Obesity	Z68.3–Z68.45	–	–	–
Diabetes mellitus	E08.*, E09.*, E10.*, E11.*, E13.*	–	–	–
Nerve conduction studies	95900, 95903, 95904, 95905, 95907, 95908, 95909, 95910, 95911, 95912, 95913	–	–	–
EMG	95800, 95801, 95803, 95804, 95805, 95806, 95870	–	–	–

Table 1.) ICD-10 and CPT codes used for data queries and associated cohort size for specific cohorts

Impact of Metabolic Disease on Cubital Tunnel Risk

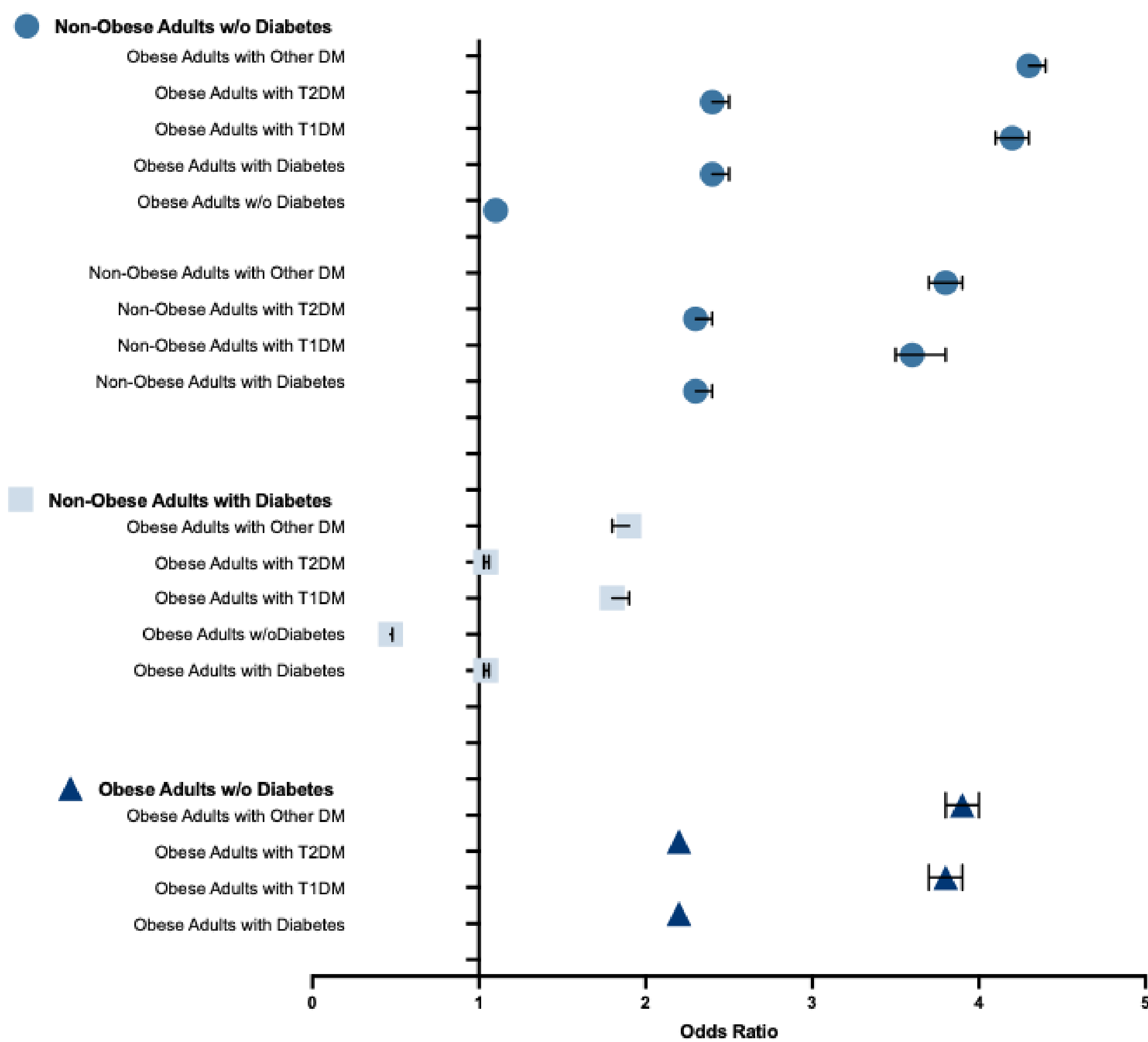


Figure 1.) Odds ratios for each group here represent the odds of CuTS diagnosis for each listed group in comparison to the bolded cohort listed at the beginning of each section of y-axis labels. ORs are represented by blue shapes, with each shape corresponding to a different section/comparison group (circles = Non-obese, non-diabetic, squares = non-obese, diabetic, triangles = obese, non-diabetic). Horizontal black lines represent 95% CI for each odds ratio.

Impact of Diabetes Subtype on Cubital Tunnel Risk

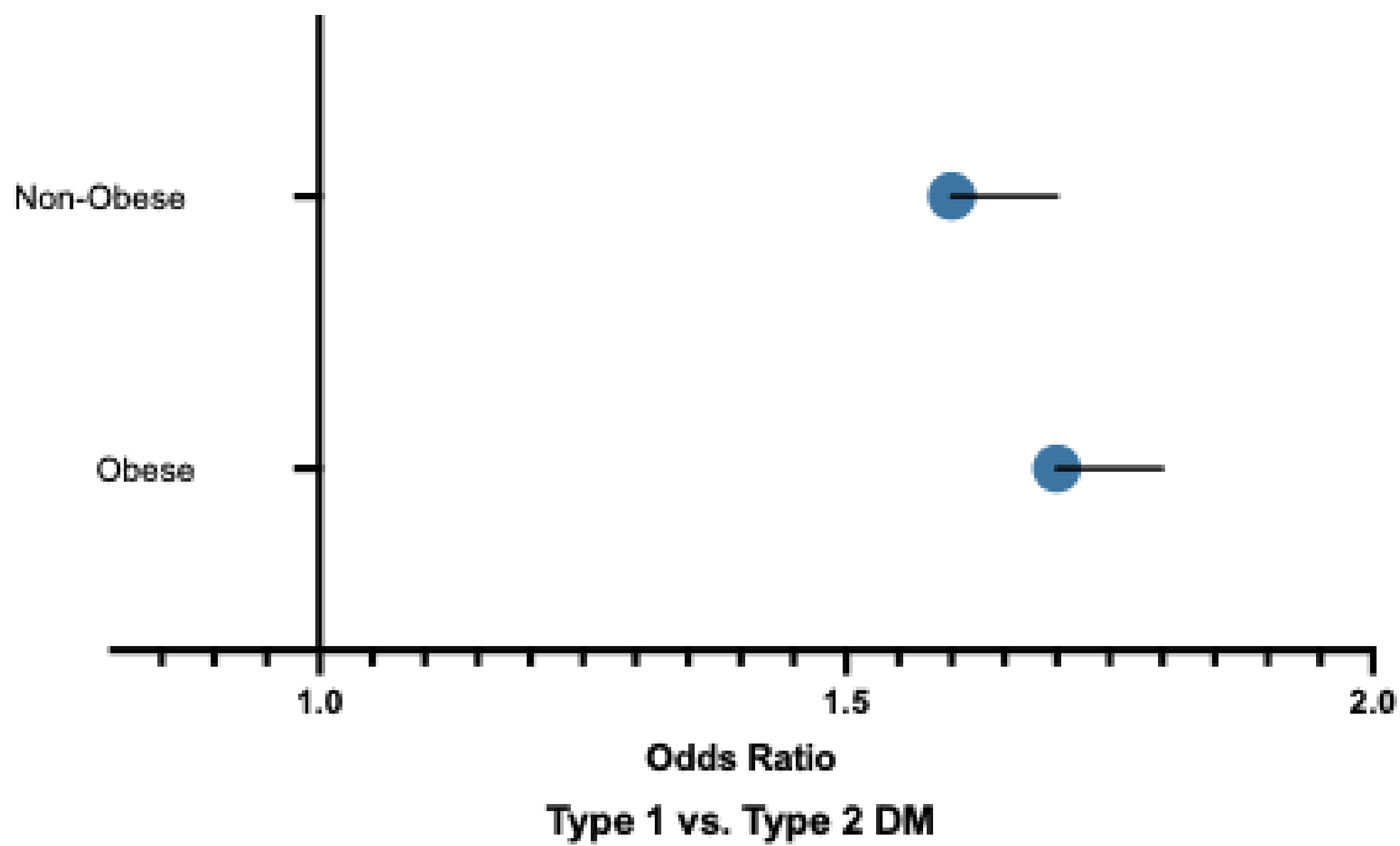
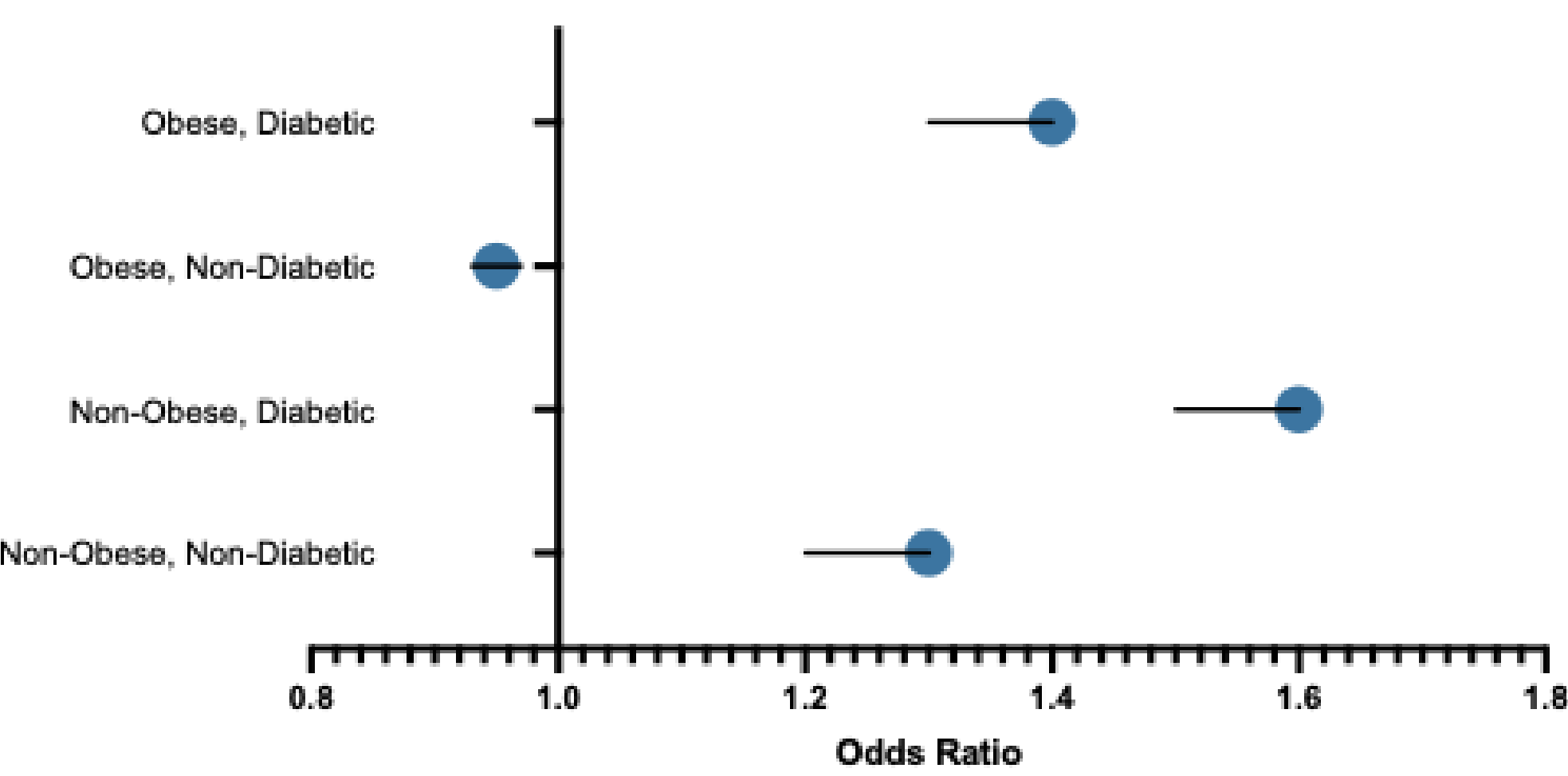


Figure 2.) Odds ratios comparing the risk of cubital tunnel syndrome for patients with type 1 diabetes relative to those with type 2 diabetes. Metabolic subgroups are indicated by the y-axis labels. ORs are represented by blue circles for each group. Horizontal black lines represent 95% CI for each odds ratio.

Impact of GLP-1 Exposure on Cubital Tunnel Risk



Figures 3.) Forest plot demonstrating the association between GLP-1 agonist use and odds of cubital tunnel syndrome across metabolic subgroups (y-axis). Odds ratios for each group here represent the odds of CuTS diagnosis for each listed group in comparison to a sample of patients from the same demographic cohort without prior GLP-1 Use. ORs are represented by blue circles for each group. Horizontal black lines represent 95% CI for each odds ratio.

CONCLUSIONS

- Obesity and diabetes were independently associated with increased cubital tunnel syndrome (CuTS) risk, with diabetes demonstrating a far more robust effect than obesity.
- Patients with concurrent obesity and diabetes exhibited the highest risk, supporting a synergistic, or at minimum additive, effect of combined metabolic disease on ulnar nerve vulnerability. This suggests that cumulative metabolic burden may be more clinically relevant than either condition in isolation.
- Among diabetic subgroups, type 1 diabetes conferred a greater risk than type 2 diabetes, regardless of obesity status, indicating that disease severity, chronicity, or underlying pathophysiology may further modulate susceptibility to nerve compression.
- GLP-1 receptor agonist use was associated with an increased risk of CuTS across nearly all metabolic subgroups, despite their established benefits in weight reduction and glycemic control.
- Potential mechanisms include rapid weight loss leading to decreased perineural cushioning, alterations in soft tissue support, or changes in elbow biomechanics that increase susceptibility to ulnar nerve compression.
- Clinically, these findings highlight the importance of heightened surveillance for compressive neuropathies in patients with metabolic disease, particularly for those taking GLP-1 agonists.
- Further prospective studies are needed to clarify causality, define temporal relationships, and identify high-risk patients who may benefit from early intervention or preventive strategies.

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