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# Case Report of Common Fibular Neuropathy After Hand Surgery in A Patient With GLP-1–Associated Weight Loss

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## ABSTRACT

We present a 40-year-old woman who developed new bilateral foot drop (right greater than left) one day after right-hand ganglion cyst excision. During her preoperative examination two weeks prior to surgery, she reported no lower extremity neurologic dysfunction. Through a fifteen month course of semaglutide treatment and concerted diet and exercise, she lost 28 kg (original weight 91 kg), reducing her body mass index (BMI in kg/m2) from 35.2 to 24.3. Electrodiagnostic testing performed approximately one month postoperatively confirmed bilateral common fibular neuropathy (CFN) localized to the fibular head. The etiology for neuropathy is likely multifactorial, including reduced protective adipose tissue from rapid weight loss, perioperative positioning-related compression or traction, and possible subclinical vitamin B12 deficiency.

This case highlights a potential association between GLP-1 receptor agonist–associated weight loss and increased susceptibility to perioperative CFN. With rising use of these medications, heightened awareness and perioperative risk assessment may be warranted.

***Keywords:*** *Glucagon Receptor Peptide-1 Receptor Agonist (GLP-1 RA), Glucose-Dependent Insulinotropic Polypeptide (GIP), Compressive, Traction Neuropathy, Common Fibular Neuropathy, Common Peroneal Neuropathy, Nutritional and Vitamin Deficiencies*

## Introduction

Glucagon-like peptide-1 receptor agonists (GLP-1 RAs) and glucose-dependent insulinotropic polypeptides (GIPs) are increasingly prescribed for diabetes, obesity, and cardiovascular disease. These agents are associated with substantial weight loss and, in some cases, nutritional deficiencies. Rapid substantial weight loss has been linked to compressive neuropathies, particularly common fibular neuropathy (CFN) (Cucu *et al*., 2025; Kim *et al*., 2023; Goizueta-San-Martin *et al*., 2016; Tucker and Ritchie,

2024; Sotaniemi, 1984) [1], however none of these studies contemplated the superimposed impact of intraoperative stresses.

We report a case of postoperative CFN following minor upper extremity surgery. Though specific mechanistic etiology is uncertain, we propose that rapid weight loss, potential nutritional deficiency, and intraoperative positioning may act synergistically to increase vulnerability to nerve injury.

This article adheres to applicable CARE (CAse REports) guidelines. The patient provided written Health Insurance Portability and Accountability Act authorization for the publication of this case report.

## Case Presentation

A 40-year-old female (161 cm, 63 kg; BMI 24.3 kg/m$^2$) underwent elective excision of a right-hand ganglion cyst that developed after carpal tunnel surgery. She had lost 28 kg over fifteen months after initiating semaglutide alongside 1000-calorie dietary restriction and increased physical activity which included walking, biking, and swimming. Her metabolic equivalent of task was estimated to be above 7. She denied any preoperative lower extremity neurologic symptoms.

The procedure was performed under monitored anesthesia care (MAC) with a supraclavicular nerve block. The patient was positioned supine with the right arm abducted <90° on an armboard. Sequential compression devices were applied, and the lower extremities were extended, padded, and secured; however, detailed documentation of leg positioning was unavailable, limiting assessment of compression at the fibular head. The surgery lasted approximately one hour, was uncomplicated, and successfully removed the ganglion cyst. There were no reported anesthesia complications, nor sustained hemodynamic instability – her lowest recorded intraoperative blood pressure approximated 80/60 mm Hg (baseline per preoperative evaluation 103/72 mm Hg). She awoke without any apparent complications.

However, on postoperative day 1, the patient noted bilateral lower extremity numbness, tingling, and weakness, more pronounced on the right. Evaluation by her primary care physician on postoperative day 4 confirmed bilateral foot drop. Subsequent laboratory studies were within normal limits, although vitamin B12 was at the lower limit of normal. [Vitamin B12 188 ng/L (180-914), TSH 1.7 mIU/L (0.3-4.2) Mg 2.3 mg/dL (1.7-2.3), Ca 5.05 mg/dL (4.57-5.43), 25-Hydroxy D2 <4.0 ng/mL (NRRP), 25-Hydroxy D3

[1] Many of the references refer to "Common Peroneal Neuropathy", which refers to same anatomic areas as Common Fibular Neuropathy. For simplicity, we have standardized our language around Common Fibular Neuropathy.

30 ng/mL (NRRP), 25-Hydroxy D Total 30 ng/mL (20-50). Reference ranges provided between parenthesis. NRRP = No Reference Range Provided]. No recent preoperative lab values were available.

Her primary care physician prescribed weekly vitamin B12 1000 mg injections for a month, recommended pausing the semaglutide, and ordered nerve conductions and needle electromyography (EMG) which was performed approximately one month later. The EMG showed a 98% and 70% conduction block at the fibular head on the right and left respectively (see Fig 1: Electrodiagnostic confirmation of postoperative bilateral fibular neuropathies in a 40-year-old woman with rapid GLP-1 RA – associated weight loss), demonstrating reduced motor activation of bilateral tibialis anterior muscles sparing short head of biceps femoris typical of fibular neuropathy at the site of compression just below the knee. The patient underwent physical and occupational therapy for her right hand, however not for her lower extremity sensory and motor deficits. After one month of vitamin B12 injections, the patient noted qualitative improvements in her lower extremity deficits with complete resolution after 4 months. Please refer to Table 1 for a Summary Timeline of Events.

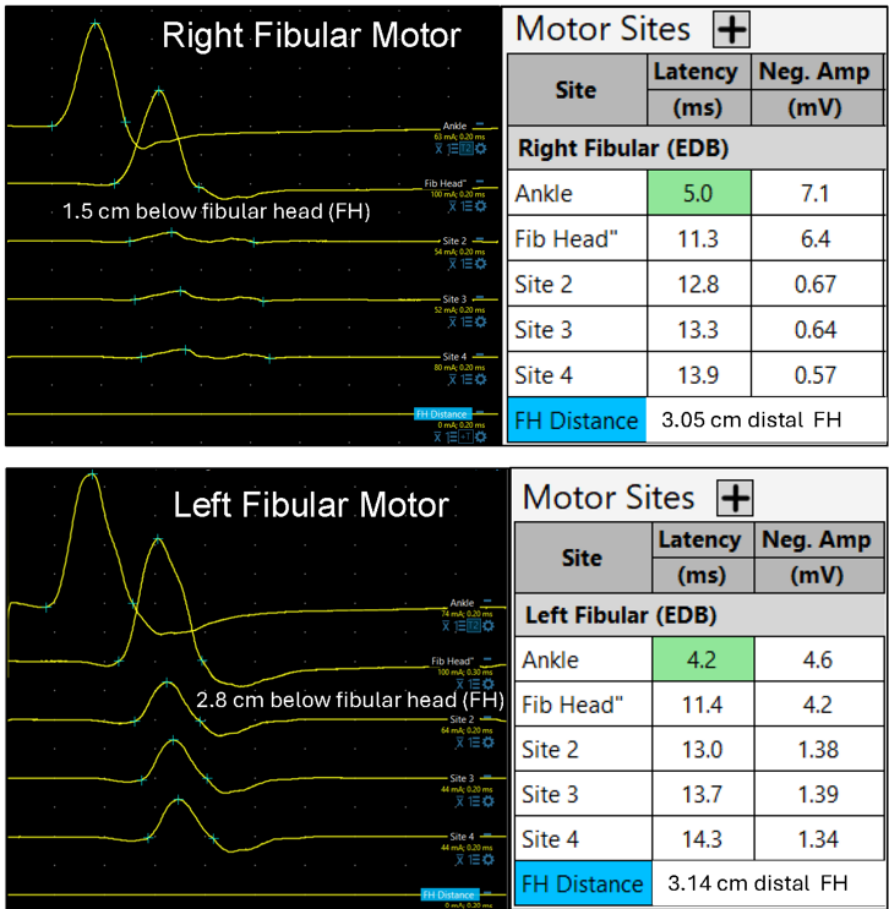


**Figure 1:** Electrodiagnostic confirmation of postoperative bilateral fibular neuropathies in a 40-year-old woman with rapid GLP-1–associated weight loss.

**Table 1:** Summary Timeline of Events.

| Timeline | Event |
|---|---|
| 15 months prior | Started semaglutide |
| Surgery Day | Right hand ganglion cyst removal |
| POD 1 | Symptomatic foot drop Right > Left |
| POD 4 | Visit to primary care physician: |
| | • Bilateral foot drop documented |
| | • Semaglutide stopped |
| | • Labs showed Vitamin B12 at lower end of normal limit, Vitamin B12 injections Qweekly x 4 |
| | • EMG ordered |
| POD 5 | Vitamin B12 injections start |
| 1 month postop | Electromyelography confirmed common fibular neuropathy right > left<br>Some qualitative improvement in common fibular neuropathy symptoms |
| 4 months postop | Complete resolution of common fibular neuropathy symptoms |

Findings are consistent with focal compression of the common fibular nerves likely related to diminished protective adipose tissue and perioperative positional vulnerability. Motor nerve conduction and inching studies demonstrate focal amplitude drop and conduction block just inferior to the bony fibular head protuberance, more pronounced on the right (98% reduction) than the left (70%). Needle electromyography of the tibialis anterior revealed reduced motor unit activation with sparing of the short head of the biceps femoris, confirming lesion localization to the fibular head region.

## Discussion

Due to its superficial course, the common fibular nerve is particularly vulnerable to traction or compression injuries at the fibular head. The patient's EMG confirmed bilateral CFN and thereby excluded other possible neuropathy differential diagnoses such as lumbrosacral radiculopathy, polyneuropathy, and central causes. The close temporal relationship between surgery and discovery of CFN implies a perioperative compressive or traction mechanism.

As of the submission of this case report, we have not found other reported cases of post surgical complications of GLP-1 RA associated common fibular neuropathy (CFN). The aforementioned retrospective case series for GLP1-RA associated weight loss (Triplett *et al*., 2025) provide the most comprehensive dataset correlating these medications and CFN as well as lumbrosacral radiculopathy, however it does not explore the superimposed impact of the surgical environment. Other case reports also provide only circumstantial information correlating severe weight loss with CFN (Goizueta-San-Martin *et al*., 2016; Kim *et al*., 2023; Sotaniemi 1984), or even terzetipide weight loss correlated CFN (Tucker and Ritchie, 2024). A large observational retrospective study of over 460,000 patients correlates nutritional

deficiencies and fat and muscle loss in type 2 diabetics and GLP-1 RAs (Scott Butsch *et al*., 2025). However, none of the above research verified specific mechanistic etiology behind CFN. Still, the confluence of severe weight loss, nutritional deficiency and intraoperative stresses appear correlated with CFN.

Several questions remain: first, it is unclear how a compressive or traction neuropathy would occur, and no further information regarding positioning and padding of the lower extremities is available. Second, though the patient did not report any preoperative lower extremity neuropathy, no prior neurologic baseline testing was available for comparison. Third, while borderline vitamin B12 levels may have created a functional neuropathy, we lack baseline vitamin B12 levels, as well as confirmatory methylmalonic acid and/or homocysteine levels. Fourth, deep MAC anesthesia dosing may severely reduce patient intraoperative movement; such inhibitions may have limited the patient's ability to offload and exacerbate intraoperative pressure onto the common fibular nerve. Fourth, the patient's smoking, nutritional status, activity changes and other medications may present confounders for some readers, however this patient did not have any reported neurologic issue as substantiated by the preoperative evaluation. Finally, until more CFN cases are reported, this single case report has limited generalizability.

Most individuals taking this class of medications will not develop postoperative neuropathy, therefore identifying at risk patients could be beneficial. Extreme or rapid weight loss could warrant surgical delay to allow restoration of adipose protection or nutritional repletion. Preoperative optimization and patient counseling should include discussion of peripheral nerve injury risk. Intraoperative preventive measures include careful leg padding, neutral limb positioning, and avoidance of prolonged pressure points, however such precautions should already be standard practice. Intraoperative neurophysiologic monitoring may be considered for surgeries. Vigilant postoperative neurologic assessment as well as lab monitoring is essential to detect deficits early and expedite primary care and neurology referrals. Should the patient have vitamin or nutritional deficits, repletion might resolve the neuropathy, but larger clinical trials will be needed to determine this efficacy.

## Conclusion

This case suggests a potential link between GLP-1 RA–associated weight loss and increased susceptibility to perioperative common fibular neuropathy. Although causality cannot be established, rapid weight loss and possible nutritional deficiencies may heighten vulnerability to compression injuries during surgery. Preoperative assessment should include inquiry into recent weight loss and nutritional status. Standard intraoperative precautions—careful positioning and padding—remain essential. Increased awareness may facilitate early recognition and management of postoperative neuropathy.

## Abbreviations:

| | |
|---|---|
| **Cm** | Centimeter |
| **dL** | Deciliters |
| **Kg** | Kilogram |
| **L** | Liter |
| **m2** | meter$^2$ |
| **mIU** | millions of International Units |
| **Mcg** | microgram |
| **Min** | Minute |
| **Mg** | milligrams |
| **mL** | Milliliters |
| **mm Hg** | millimeters of Mercury |
| **Ng** | Nanogram |

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