

Case Study

Neuromuscular Electro-Stimulation as Adjunct Therapy for Chronic Leg Lymphedema and Lipoedema

Author: Yolandi Fourie, Registered Nurse, Ermelo Certificates in Advanced Wound Care – Eloquent 2019 & Lymphoedema and compression – Juzo 2023

Lipoedema is a chronic condition characterized by an abnormal accumulation of fat primarily in the lower body, leading to swelling, pain, and tenderness. It predominantly affects women and is resistant to conventional weight loss strategies. Secondary lymphedema often accompanies lipoedema, exacerbating symptoms and complicating treatment.

This case study explores the application of the geko™ device—a neuromuscular electro-stimulation device—as an adjunct therapy for a patient with Stage 3 lipoedema and secondary lymphedema.

Patient Overview

A 66-year old South African presented with Stage 3 lipoedema and secondary lymphedema. Her medical history includes hypertension, renal issues, and elevated blood sugar levels, with a BMI exceeding 35. Current medications include Cymgen 60 mg for peripheral pain, Clexane 40 mg, Emcor 5 mg, Apixaban 40 mg, and Ciprofloxacin BD.

Presenting Symptoms

Lipoedema details:

- **Affected Areas:** Thighs, buttocks, and legs
- **Stage:** 3 (Advanced)
- **Symptoms:** Chronic fat buildup, disproportionate swelling in lower body, pain (rated 10/10), tenderness, easy bruising, connective tissue hardening, persistent swelling.

Complications

- Deformations in thighs and knees affecting mobility
- Secondary lymphedema
- Orthopaedic complications
- Severe pain, infections, and cellulitis

Emotional Impact

The patient faces significant emotional and physical challenges due to her condition. Severe pain has limited her mobility, leading her to spend prolonged periods in a recliner to manage discomfort.

Assessment

- ✓ **Physical Examination:** Gaiter area ulcers, cellulitis, erythema, and maceration of the epidermis.
- ✓ **Wound Assessment:** Exudate present (thin, clear fluid), visible ulcer covered with yellow slough, pressure injury at the left heel.

Treatment Plan

- 1. Wound Care:**
 - Pressure bandages applied to weeping ulcers.
 - Regular monitoring of ulcer healing.
- 2. Pressure Garments:**
 - Recommended EasyWrap Light Foot and EasyWrap Light Leg Tall for improved compression and comfort.
 - These garments provide adjustable compression for enhanced comfort.
- 3. Geko Device Application:**
 - Introduced due to inadequate improvement and high pain levels.
 - The geko device stimulates the common peroneal nerve, activating calf and foot muscle pumps, promoting venous circulation and aiding lymphatic drainage. Its portability allows patients to activate muscle pumps while seated or lying down, mimicking walking.

Device Application

The geko device was applied bilaterally for 12 hours, followed by a 6-hour rest period. This cycle was continued for 48 hours, after which the device was primarily worn at night. The patient quickly adapted to its use.

Results

After **48 hours** of geko device application, significant measurements were recorded:

- **Right Calf:** Reduced from 60 cm to 56 cm
- **Right Ankle:** Reduced from 38 cm to 35.5 cm
- **Left Calf:** Reduced from 64 cm to 57 cm
- **Left Ankle:** Reduced from 38 cm to 37.5 cm

The patient reported a decrease in burning pain from 10 to 2 and began regaining toe movement. Wounds appeared drier, with less exudate.

The enhanced blood flow not only provided hope to the wound care nurse but also uplifted the patient's mood.

Discussion: Lipoedema is a chronic condition marked by abnormal fat accumulation in the lower body, primarily affecting women. It often leads to swelling, pain, and tenderness that do not respond well to diet and exercise. Lymphedema, a progressive condition, arises when the lymphatic system cannot manage fluid drainage, leading to subcutaneous tissue swelling.

The patient's lymphedema improved significantly with the geko device used in conjunction with compression therapy, enhancing her quality of life. She experienced increased range of motion in her toes and ankles and found the device easy to use with no reported side effects.

Conclusions: This patient with longstanding secondary lymphedema in her lower limbs demonstrated measurable reductions in leg circumference following 2.5 months of geko therapy. She reported significant symptomatic relief, including decreased fatigue and improved mobility, leading to an enhanced quality of life for both her and her family. These outcomes exceeded those achieved with previous therapies.

Started with GEKO as conjunction therapy



References

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