

Lower Leg Wounds and the Role of Edema: Managing Edema with the geko™ Wound Therapy Device

Authors: Burrows, C.,RN, BScN, MScCH (Wound Prevention & Care) Ramage, D., RN, Rabley-Koch, C.A., BSc, RN, NSWOC,WOCC(C), Evans, R., BSc, MD,CCFP, FCFP

Aim

Lower limb edema is caused by fluid accumulation in the interstitium. Edema can be unilateral, bilateral, acute or chronic. Patients experience limb heaviness, fatigue, throbbing, cramping, burning and itchiness as well as wound formation and/or delays in wound healing¹. Edema can be the result of calf muscle pump dysfunction. Meulendijks asserts that calf muscle pump dysfunction has been shown to be strong predictor of venous leg ulcers and healing².



Procedure/Method

A literature search was conducted using key words: edema, venous leg ulcers, calf muscle pump function, and neuromuscular electrical stimulation. Searches included the Cochrane Library, Medscape, CINHALL, PubMed, Medline, Embase, Scopus and peer reviewed journals

Findings/Results

The literature supports edema management through a variety of modalities. It is reported that using the geko™ device demonstrated improved edema reduction compared to standard of care. Changes in urine output, limb measurement or readiness for surgery were metrics used to determine outcomes.

- An RCT conducted at London Health Sciences Centre with 221 renal transplant patients, post operative day 1-6, demonstrated minimal edema to the calf by 2.5 cm with the geko™ device vs 3.6 cm in standard of care ($p=0.001$). Weight gain was 4.06 kg vs 5.18 kg ($p=0.003$) and urinary output was 15.9 litres vs 12.6 litres ($p=0.003$) using the geko™ device compared to standard of care (intermittent pneumatic compression and TED stockings)³.
- Baker *et al.* studied 20 patients using the geko™ device preoperatively for ankle fracture patients requiring surgery. The results are reported as 60% of patients were ready for surgery in 2 days, compared to 27% in control arm, a 122% improvement. Standard treatment = 3.66 days readiness for surgery vs the geko™ device + plaster cast = 1.66 days readiness for surgery ($P=0.001$)⁴
- Ingves and Power reported 2 cases of multifactorial and refractory leg edema successfully reduced by 7 and 21% with the geko™ device over 4 to 16 weeks.⁵

Implications/Applications

Edema impacts time to wound healing, patient safety, mobilization and quality of life. Clinical studies have demonstrated that the use of geko™ wound therapy device reduces edema in a range of patient groups. The geko™ wound therapy device activates the lower leg muscle pumps once per second to augment venous and arterial blood flow, reduce venous congestion, and decrease leg edema. Intervention with the geko™ wound therapy device may reduce pain and congestion in the limb thereby affording improved adherence with compression therapy. The geko™ therapy device is a simple, safe, user-friendly device that can be used as a cost-effective and efficacious adjunctive therapy or on its own to treat and manage leg edema. Innovative technology such as the geko™ wound therapy device offers the solution to the challenges of edema management and self care. As clinicians consider the provision of care, virtual Visits have become an option. Use of the geko™ wound therapy device can be taught and self managed virtually by patients and care providers, offering an alternative for clinicians to treat lower leg edema.



References

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