

An Innovative Technology for Healing Venous Leg Ulcers: geko™

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Keith Harding is Dean of Clinical Innovation, Cardiff University and Medical Director of the Welsh Wound Innovation Centre in Wales, UK. He has undergone training in both general surgery and general practice and has had a longstanding interest in wound healing. His clinical practice is exclusively focused on treating patients with wound-healing problems with a wide range of etiologies.



Low frequency nerve stimulation of the common peroneal nerve (geko™ device) is a new technology in wound care that was first used in Canada in 2014. The intuitive idea was that stimulating this nerve generates muscle activity that results in improved blood flow in the limb. If one of the factors that leads to chronic ulcers is tissue having impaired blood flow forms then improving that blood flow would seem to be a logical approach to healing the wound. Ironically, the technology was never designed for treating wounds but rather to prevent blood clots from forming during long-haul flights.

A prestigious group of Canadian clinicians and academics have looked at the available data and have written a paper titled “Low-frequency Nerve Stimulation to Support the Healing of Venous Leg Ulcers.” The evidence continues to build and the science will continue to evolve. However, at present, the authors believe that low-frequency nerve stimulation (LFNS) may offer benefits in at least the following areas:

- Enhanced wound healing of chronic ulcers
- DVT prophylaxis
- Pain management
- Edema reduction
- Improved blood flow in a limb
- Potentially an ability to treat neuropathic symptoms

This technology would appear to have captured the imagination of a broad range of wound care professionals. While more research is surely needed, this takes time—and what do we do in the interim? The risk profile of the technology is such that the primary side-effect reported has been that of a skin rash under the site of application of the electrode. Compared with the potential benefit, this risk would probably be considered somewhat benign by comparison to the prolonged duration of compression therapy and risks (such as infection and amputation) associated with the healing process under current modalities.

Based on the content of the paper, new evidence that has emerged since the group commenced their efforts and my own



personal experience of using the technology, geko™ should be considered as an adjunctive therapy in the following groups of patients until the larger trials are completed:

- Fixed ankle joints or in those with limited mobility (i.e., <200 metres per day). Blood flow is known to be compromised in these patients due to a lack of muscle pump activity.
- When wounds have become or are suspected to become (based on history/risk factors) difficult to heal. This is typically thought of as wounds that have not reduced in size by 30% at 30 days of best practice therapy.
- When compression cannot be tolerated. Without compression, blood flow is compromised. In some patients, compression could be tolerated after LFNS for a period of time.
- Where edema is present. Edema impedes healing progress and this, of course, is also tied to blood flow.
- For the management of peripheral neuropathic symptoms.
- For patients that have pain associated with their wounds.

The main danger preventing wider adoption of this technology appears to be financial consideration. However, when one considers the guiding

principle of “treating the root cause” of all wounds it would seem reasonable that many wound patients would benefit from improved blood flow. If the technology exists to deliver this then it should be used where appropriate.

