Improving patient quality of life with innovative electroceutical technology

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ACCEL HEAL®
a Synapse electroceutical technology

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Introduction

Leg ulcers are associated with continuous pain, restricted mobility and decreased quality of life (Persoon et al, 2004; Jones et al, 2006). While many patients with leg ulceration experience high pain levels, patient wellbeing reaches beyond just being free of pain. In their 2012 study, Upton et al demonstrated that people living with chronic or acute wounds often experience poor psychological wellbeing. It is therefore necessary to look at quality of life as a component of wellbeing (Wounds International, 2011).

The Government Office for Science (2008) defines wellbeing as "a dynamic state in which an individual is able to develop their potential, work productively and creatively, build strong relationships with others and contribute to their community". The World Health Organization (1948) in its constitution states that: "Health is a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity." Physical wellbeing is the ability to function normally in activities such as bathing, dressing, eating and mobility. Mental wellbeing stipulates cognitive faculties to be intact and patients to be free from fear, anxiety, stress, depression or other negative emotions. Social wellbeing includes the ability to participate in and engage with family, society, friends and colleagues.

At Bromley Healthcare we provide leg ulcer management in our award winning tissue viability clinics, a Leg Club, and also by our District Nursing Service. Bromley Healthcare has a long-standing record of achievement in wound healing. Even with our average healing rate for VLUs of 5.7 weeks, we continue to strive for new, innovative ways to enrich our treatment programmes and improve outcomes for our patients. As part of this we have successfully used the electroceutical Accel-Heal to treat many patients with complex wounds. Accel-Heal is a 12 day treatment course pre-programmed to deliver a specific series of electric energy interactions through the skin to manipulate gene expression and modify specific psychological functions in dermal tissue, improving and accelerating healing. It is applied alongside the patient's standard wound therapy regime and can be used under compression bandaging.

Method

All clinical staff were trained in the application and use of Accel-Heal therapy. The patients presented with complex leg ulceration of varying longevity from 3 weeks to over 2 years, which had failed to progress using standard therapies. The patients were selected due to unresolved pain and non-healing ulceration.

The patients all underwent full comprehensive leg ulcer assessments, ankle brachial pressure index (ABPI) measurement and the recording of all relevant medical history, medication and allergies. Permission was obtained from all patients and relatives, where appropriate, regarding their contribution to these clinical case studies via photographs and interviews.

The patients were advised prior to the commencement of treatment that Accel-Heal is not designed to heal the ulcers within the 12-day course, but that it works to induce the healing process with best practice leg ulcer management.

Discussion

Complex wounds present many challenges to health professionals. They also have a detrimental impact on the patients' emotional, physical and social wellbeing and quality of life as demonstrated in the case studies here.

Advanced modalities such as Accel-Heal used alongside standard treatment have been proven to promote positive clinical changes to complex wounds in these clinical case studies as well as in previous clinical studies. (Griffin 2013, Ovens 2014 and Tadej 2010). Additionally, these case studies demonstrate the clinical effectiveness of this therapy as suitable for use in acute cases as well as a treatment for complex wounds that have become chronic.

Conclusion

The improvement to quality of life and wellbeing of patients as a result of using advanced modalities such as Accel-Heal cannot be underestimated. Given the range of clinical and socio / psychological evidence advanced modalities such as Accel-Heal should be considered and used as soon as possible if appropriate to enable patients to regain their quality of life and improve their clinical outcomes.

As the case studies demonstrate complex wound management is not just about healing or managing the wound. It is crucial for clinicians to ensure all interventions address the person as a whole and are timely, appropriate and lead to improvement in the overall quality of life and wellbeing.

Patient 1

Presentation

Mrs SB is a 57-year-old lady who is married with three children and works full time as a children and families social worker. She is usually an active member of her church community and likes to socialise with her family and friends. Mrs SB reported the effects of living with her ulceration as "utterly debilitating" and "the most stressful experience of my life". She described her overall quality of life as "the worst possible" due to the physical symptoms that affected her daily life. Mrs SB experienced constant pain that prevented her from sleeping and that she described as "much worse than labour pains because it hurt just as much but unlike labour pains was constant". She reported feeling extremely anxious and stressed, as she was unable to work because of the pain and the side effects of the analgesia, which made her feel very drowsy. As a result of the ulceration, she was unable to attend her regular church services or get involved in her usual social activities. She found this "deeply upsetting" as she felt removed from her church community, which she described as her "support circle outside the family". The ulceration also impacted on her ability to perform her activities of daily living and she had to rely on her husband for assistance, which made her feel a "burden" to him.

Presentation

- 57 year old female presented with spontaneous right lateral malleolus ulceration of three weeks duration which failed to progress and increased in size to 12.2cm2
- Pain score of 10/10 on Visual Analogue Scale (VAS) despite regular Tramadol and Co-codamol
- Wound bed 100% sloughy, shallow with macerated edges and malodorous with erythema to the peri wound skin.

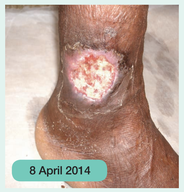
Medical History

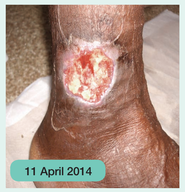
- Sickle cell trait (1984)
- Essential hypertension (1999)
- Thyrotoxicosis (2008)
- Graves' disease (2009)
- Right leg laser ablation to treat varicose veins (2011)

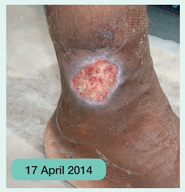
Treatment and Results

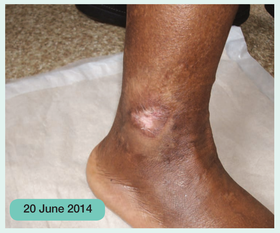
Accel-Heal treatment was commenced on 8 April 2014 for 12 days alongside her compression therapy. The objective of the treatment was to reduce pain and inflammation. Mrs SB was trained to independently change the device every 48 hours. On 11 April, significant improvement was noted with the wound bed debriding and Mrs SB's pain score had reduced to a VAS score of 6/10. By 17 April, granulation buds were developing and the inflammation was reducing. Accel-Heal treatment was completed on 20 April and by this date the wound bed had undergone significant changes, with the development of further granulation buds and reduced exudate. Mrs SB reported a further reduction in pain at this time, having a VAS score of 0–4/10. The wound continued to reduce in size and tramadol was discontinued. On 29 April, Mrs SB was able to return to work on reduced hours. Full healing was achieved on the 20 June 2014.

During the Accel-Heal treatment, Mrs SB reported that "the pain started to get less and less and I could see the wound healing, which was wonderful". When her ulcer had healed completely, she said: "I feel that I now have my life back and can function normally without being a burden on my family," and "I am delighted because I am no longer in pain" and "not having to take lots of medication".









Treatment summary results

- 8 April: Ulcer size 12.2cm2, Pain level 10/10
- 11 April: Ulcer size 12.2cm2, Pain level 6/10
- 6 May: Ulcer size 10.1cm2, Pain level 0/10
- 23 May: Ulcer size 4cm2, Pain level 0/10
- 20 June: Ulcer size 0cm2, Pain level 0/10

Patient 2

Mrs EY is an 81-year-old widow with two sons and six grandchildren. She is a retired teacher. She was a keen golfer, and although unable to play anymore following hip replacement surgery, she remains an active member of the golf club's social club. She is also a regular bridge player. Mrs EY had her leg ulcer for 12 months before being referred for treatment to the Leg Ulcer Service. She reported that "looking after the wound took over my diary" due to regular appointments with the practice nurse for treatment at her GP surgery. The ulceration also impacted on her activities of daily living, such as showering and getting dressed. She stated that these activities "took much longer", which impacted on her ability to function properly in terms of physical wellbeing. She also had to organise her shopping trips for quieter times of the day due to "anxiety about bumping the wound site, especially in supermarkets".

Presentation

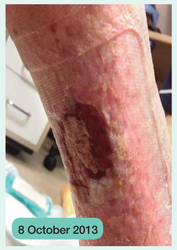
- 81 year old female presented with chronic ulceration in the gaiter region of right lateral leg of 12 months duration measuring 10.5cm2.The onset of her first ulcer was 10 years previously and she had experienced approximately two episodes of ulceration per year since that time.
- Pain score of 10/10 on VAS with erythema and oedema of the peri-wound skin noted, and ABPI of 1.1
- Could not tolerate compression therapy due to pain.

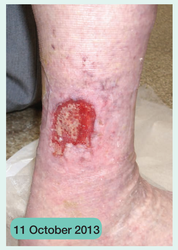
Medical History

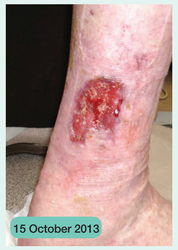
- Atrial fibrillation
- Ocular hypertension
- Hypothyroidism
- Osteoarthritis

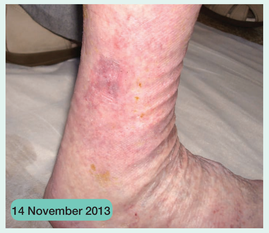
Treatment and Results

The treatment with Accel-Heal was commenced on 8 October 2013. Treatment ran for 12 days alongside the patient's compression therapy. Mrs EY was trained to independently change the device every 48 hours. By 11 October, the ulceration had decreased in size by 10%. The exudate level had reduced, and peri-wound erythema and oedema had resolved. Mrs EY reported a reduction in pain, measuring 6/10 on the VAS scale. On 15 October, the ulcer had reduced in size by 20% and the patient's pain was 5/10 on the VAS scale. By 18 October, the ulcer had shrunk by approximately 30% since 8 October. Accel-Heal treatment was completed on 22 October. Since the commencement of treatment, the ulcer had shrunk in size by 40%. At this time, the patient reported a pain score of 2/10. Three weeks post Accel-Heal treatment the ulcer had reduced in size by 80% and patient's pain was 0/10 on the VAS scale. The Accel-Heal treatment had successfully achieved its objectives of reducing the pain and inflammation, and as a result the patient was able to tolerate compression therapy. The ulcer progressed to full healing on 14 November. During the Accel-Heal treatment, Mrs EY stated that "I could see my wound improving almost immediately and for the first time in a year I felt hopeful that it would heal". With her ulcer now healed, Mrs EY feels that she has her life back and can "shop when I want to".









Treatment summary results

- 8 October: Ulcer size 10.5cm2, Pain level 10/10
- 11 October: Ulcer size 10.1cm2, Pain level 6/10
- 15 October: Ulcer size 7.9 cm2, Pain level 5/10
- 22 October: Ulcer size 4.5 cm2, Pain level 2/10,
- 14 November: Ulcer size 0.0 cm2, Pain level 0/10

Patient 3

Presentation

Mrs DS is an 83-year-old widow who suffers from dementia but has a very supportive daughter. Mrs DS is a very elegant woman who takes great pride in her appearance and is a very private person. She enjoys spending time with those closest to her, her daughter and her family, taking part in family outings and going out for coffee and shopping. Her daughter is married, works full time and has a grown-up son and an 11-month-old granddaughter. Mrs DS lives independently but depends on support from her daughter. Her daughter described the effects of her mother's ulceration as a "living nightmare" for both her mother and the family.

Mrs DS found the physical symptoms of her condition distressing and extremely stressful. The pain disturbed Mrs DS' sleep, as "even the weight of a sheet touching the leg caused extreme pain". The high levels of malodorous, uncontrolled exudate also caused Mrs DS significant upset, with the exudate seeping through the dressings and often "into her shoes and staining her clothing". Her daughter described the smell from the wound as "so bad that we had to open windows". As a result, Mrs DS withdrew from family contact, becoming a "virtual recluse", only allowing her daughter to visit regularly. She was "extremely embarrassed by the smell" and "kept apologising" to her daughter.

The patient's daughter said: "It was awful watching mum go through this hell with no improvement; sobbing in pain, being embarrassed by the smell from her wound and withdrawing from life; and not being in position to help her in any real way was truly awful. Mum has always taken great pride in her appearance and was mortified when the exudate would seep through her clothes. Along with the really vile smell coming from her wound and the fact that she could not find any suitable footwear to accommodate the dressings, Mum's already fragile self-confidence dwindled even further. She got to a point where she didn't want to have contact with the wider family, missing out on seeing her baby great granddaughter, and she spent most of her time isolating herself. Her condition affected every aspect of our life as a family."

Presentation

- 2-year history of spontaneous ulceration in the gaiter region on her left leg which had remained unhealed and was her second episode of ulceration in 6 years.
- During this period, the patient underwent compression therapy with previous clinicians but it was discontinued for reasons that remain unknown.
- Her wound bed was 100% slough with peri-wound oedema. Her ABPI was 0.92 and her pain was 7/10 on the VAS.

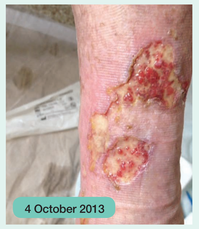
Medical History

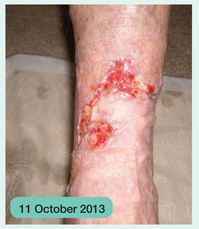
- Type 2 diabetes
- Dementia
- Degenerative spondylolisthesis
- Diverticular disease
- Right partial parotidectomy
- Essential hypertension.

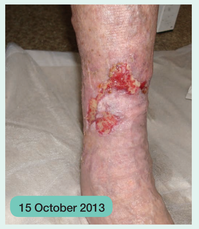
Treatment and Results

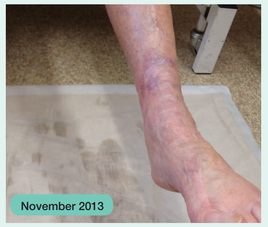
Accel-Heal treatment was commenced on 4 October 2013 for 12 days alongside compression therapy. On commencement, the total wound area measured 10 cm2 and there was a 100% sloughy wound bed. On 8 October, the wound had reduced in size by 20% and granulation tissue had formed. Mrs DS reported reduced pain (4/10 on the VAS scale). By 11 October, the wound area was 30% smaller than at the start of treatment. The wound bed continued to develop granulation buds and decrease in size. Mrs DS' pain score had reduced to 1–4/10. On 15 October, the wound area had reduced in size by 40%, with epithelialisation tissue appearing. The pain score remained at 1–4/10 on the VAS. Treatment was completed on 16 October. Post treatment, on 22 October, the wound area had decreased by 60% and her pain had reduced to 0–2/10. On 1 November, the wound had decreased in size by 90% and the pain had completely resolved. Full healing was achieved on 8 November, which was within 5 weeks of beginning treatment with Accel-Heal.

During the Accel-Heal treatment, Mrs DS' daughter stated: "It felt like we were witnessing a miracle. Mum's pain and exudate diminished and within days we could see the wound getting smaller. It was so nice to see Mum begin to enjoy life once again. With the wound now healed Mum enjoys spending time with her great-granddaughter. It's great. We were lucky in the end. Wounds like Mum's ruin lives — it's not just the wound that is affected — it is the whole person that's affected, and their family as well."









Treatment summary results

- 4 October: Ulcer size 10.0 cm2, Pain level 7/10
- 8 October: Ulcer size 8.0 cm2, Pain level 4/10
- 11 October: Ulcer size 7.0 cm2, Pain level 1–4/10
- 15 October: Ulcer size 6.0 cm2, Pain level 1–4/10
- 22 October: Ulcer size 4.0cm2, Pain level 1–2/10
- 1 November: Ulcer size 1.0cm2, Pain level 0/10
- 8 November: Ulcer size 0.0cm2 Pain level 0/10

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