Using POSiFECT® to bring symptom relief in end of life care

Denise Roberts is Tissue Viability Nurse Specialist, Northwest Wales NHS Trust, Ysbyty Gwynedd, Penrhhosgarnedd, Bangor

Peripheral vascular disease is a painful and debilitating condition that has many causes, including hypertension, smoking, diabetes and hyperlipidaemia (Morison, 2006). In this case study the patient had severe peripheral vascular disease and chronic obstructive pulmonary disease and had previously been admitted to hospital to treat leg ulceration and recurrent cellulitis. He had been a heavy smoker (60 per day) only stopping with the onset of his chronic obstructive pulmonary disease.

The patient initially presented with an oedematous, swollen, exuding, ulcerated lower leg. He was in a great deal of pain requiring significant analgesia (tramadol and paracetamol) however, this did not ease his discomfort. The pain that patients encounter with peripheral vascular disease can be described as ongoing and in severe cases it can be excruciating, with no relief on rest (McPherson and Wolfe, 1992). Elevation of his limb may have reduced the dependent oedema but as he required regular inhalers and almost constant oxygen therapy, it was impossible due to his poor respiratory function. The patient was reviewed by the vascular team who advised him that amputation of his right leg was the only remaining course of therapy, however, due to his poor respiratory function the surgery was not deemed possible. Therefore, it was decided that he should be treated palliatively and he was transferred to a hospital for rehabilitation and long-term care.

By the time the patient was referred to the tissue viability service, his leg ulcers were no longer exuding, however, as a result of the earlier heavy exudation and difficult management of his skin care, he had now developed a grade III pressure ulcer (EPUAP, 1999) on his right heel. The patient had been transferred out of the acute hospital and was now being looked after on a rehabilitation ward in a separate hospital. Doctors had told him that there was little that they could do for him in terms of his condition. Therefore any form of treatment was seen as conservative. On inspection the ulcer was wet with macerated peri-wound skin, dull red in colour and measured 6cm x 5cm. It was dressed with Aquacel® (ConvaTec, Ickenham) and a foam dressing. The ulcer looked infected and was malodorous. A swab was taken but no significant growth was found. The patient complained bitterly of extreme discomfort. It was also noted that two of the toes on his right foot had become necrotic. These were left exposed to auto-amputate (*Figure 1*).

Quality of life

The patient was a very courteous, tall man with the demeanour of someone burdened by the trials of the past few months. He said he had lost weight since being in hospital despite the fact that his notes reported his diet as good. He did not mobilise much due to the pain from his heel ulcer, only walking to the toilet using a Zimmer frame.

When asked how he was feeling, the patient explained that he felt depressed and fed up. On speaking about his future, he felt that he had been forgotten about and was being left to die. He had spent Christmas in hospital two months earlier and missed his wife terribly. He had feelings of isolation and helplessness which were obviously having an impact on his well-being. His wife had recently undergone surgery and he felt that he should be there to look after her but was not in a position to do so. Ades et al (2001) report that the impact of these type of issues are often overlooked and can severely affect quality of life.

Assessment of the patient's needs highlighted that his pain relief was not effective and the constant pain was causing mental and physical distress. The heel ulcer was static and unless this improved he would be unable to go home. It did appear that the patient would be in hospital for a very long time unless an alternative treatment could be offered. It was during this time that Biofisica (Odiham), the makers of POSiFECT, were offering to carry out evaluations of chronic wounds. The patient was asked if he would be interested in the evaluation to which he agreed, saying he was eager to try the therapy which he hoped would allow him to return home sooner.

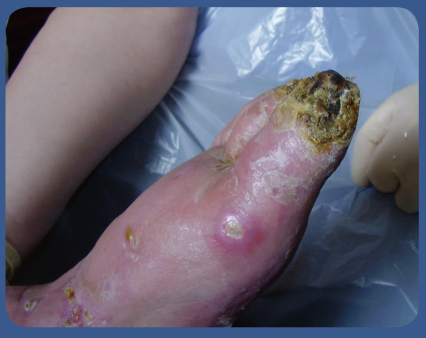
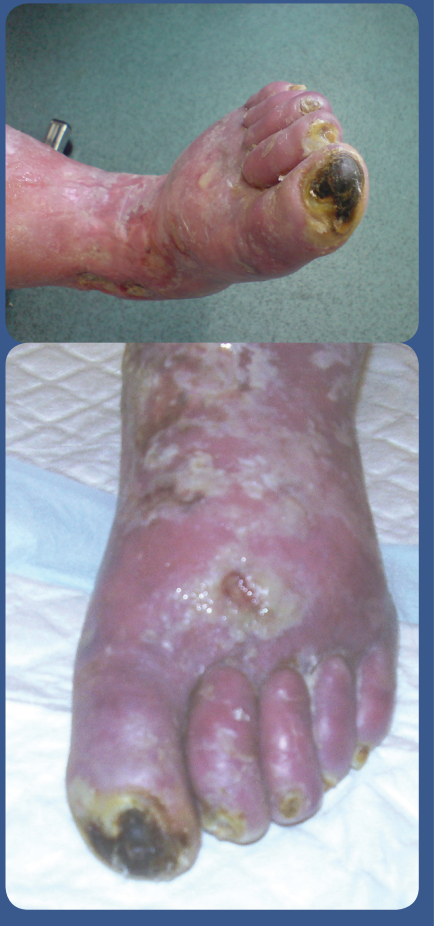


Figure 1. The patient's foot showing the necrotic toes that were initially left to auto-amputate.



Figures 2 and 3. Patient's foot after treatment with POSiFECT. Necrosis appears to have reduced in size.

Wound management using POSiFECT

Following initial assessment, the patient was selected for POSiFECT e-stim therapy. This treatment is specifically indicated for the management of chronic non-healing wounds

which have failed to respond to conventional interventions. It delivers an exogenous electric current mimicking the endogenous biocurrents present in acute wound healing but which have been found to be absent or reduced in this type of wound. The desired effects of the electrical currents re-establish the wound healing process.

POSiFECT therapy was delivered in two three-week cycles with a one-week rest period in between. During each three-week cycle the wound receives a constant application of bioelectrical currents. There is then a one-week period where the POSiFECT dressing is not applied. It was during this time that the patient encountered severe pain and discomfort, after a three-week period of virtually having no pain at all. Once the second three-week cycle commenced the pain had gone again. Dressings were changed every 48–96 hours during the active therapy phase.

It was decided to continue the patient's previous dressing regimen of Aquacel ribbon® with the POSiFECT unit used to manage exudate along with the addition of a barrier film to the peri-wound skin to avoid possible maceration and excoriation. Application of the POSiFECT device was unproblematic; the ring encircled the ulcer and the cathode was placed in the centre of the wound.

On applying POSiFECT to the wound, the peri-wound area must first be prepared. The clinician should remove the old dressing and cleanse both the wound and the surrounding skin. When activated, POSiFECT may cause changes in the inflammatory status (Hampton and King, 2005) thus bringing about an increase in wound exudate. The surrounding skin area may be adversely affected by this change and cause some excoriation. In order to prevent this Cavilon stick (3M Healthcare, Loughborough) was applied to the surrounding skin areas. When the wound has been prepared the POSiFECT dressing can be applied. The dressing comes within two packets, an outer wrapping and an inner pouch. The inner pouch holds the dressing and it is this part of the packet that is sterile. In removing the POSiFECT dressing from the inner pouch clinicians must ensure that they are abiding by aseptic technique measures. The dressing needs to be activated before application. This was done by removing the black tab on the electric module assembly that is situated on the outer side of the dressing. Once the red light flashes the dressing is ready to be applied. The application of the POSiFECT dressing was very easy as it presents as a ring with a flap on that can be removed if so wished. The dressing then goes over the peri-wound area, there is a cathode that is attached to electrical module assembly which was placed in the centre of the wound. During both cycles the cathode was rotated around the wound to ensure an even distribution of electrical current.

It is important to apply an absorbent dressing (in this case Aquacel) to help absorb the exudate. Silver dressings were avoided as this can effect the biocurrents being transmitted into the wound.

Once the POSiFECT was in place, extra gauze padding was applied to aid comfort and prevent rubbing or pressure to the skin and was retained with a yellow line stockinette bandage.

Results

Within 24 hours of application, the patient reported that his pain had reduced significantly. A pain scale was used, based on the John Hopkins pain rating instrument of 0 to 10. This proved very useful as the patient was able to describe the pain in terms of how bad it was. Before application of the POSiFECT dressing the patient had described his pain as being above 7. During the cycles the pain dropped to 0. This continued over the course of the first three-week cycle making walking easier. The ulcer began to show improvement in the second week, however, unexpected changes were also noted in his necrotic toes. These had once been black and dry but now appeared hydrated with lifting of the eschar. This continued until only a small area of necrosis remained on the tip of the left great toe (*Figures 2 and 3*).

As the first three-week cycle came to an end the possibility of the patient being discharged became a reality. Community staff were contacted and he was finally able to go home. This coincided with the 'rest' period of POSiFECT® therapy. During this period it was noted that the pain began to return, however, this subsided once the second therapy cycle commenced and remained absent even after this cycle finished.

Unfortunately after six weeks at home with his family the patient's general condition worsened and as a result he was readmitted. He was made comfortable and dressings were applied to contain exudate but the patient died one week later.

Conclusion

The real result of this evaluation could not be judged in terms of ulcer reduction even though there were clear signs that this appeared to be occurring. What POSiFECT achieved for the patient was immeasurable. The reduction of pain, from the first week that the device was applied, lifted his spirits immensely and improved his quality of life. The improvement to his foot allowed him to finally, return home to his family enabling him to spend quality, pain-free time with them before his death. WUK

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