

Evaluating a new foam dressing with a healing accelerator

Many chronic wounds show the stimulation of pro-inflammatory cytokines prolonging the inflammatory phase of healing, which results in more proteases being produced. The impact of chronic wounds on patients can be significant and there is increased risk of infection, which further complicates their treatment. There are also cost implications for the NHS to consider. This article details an evaluation of UrgoCell® Start TLC (Urgo Medical), a dressing that incorporates a healing accelerator (nano-oligosaccharide factor).

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KEY WORDS

Chronic wounds
Wound dressings
Healing accelerator
Pain

In patients with chronic wounds (those over 4–6 weeks old) it is not uncommon to encounter problems with the wound healing environment (Falanga, 1999). For example, chronic wounds are particularly common in the elderly population for a number of reasons, including the impact of chronic conditions on their health and the influence this may have on wound healing. The key to healing these wounds is finding the trigger factor, which can kick-start the healing process.

The impact of chronic wounds on patients can be significant and there is increased risk of infection, which further complicates their treatment. There are also cost implications for the NHS to consider:

Falanga (1999) details a number of features of chronic wounds, including a drop in the levels of growth factors and an increase in the levels of proteases, an imbalance that can lead to chronicity. The enzymatic action of proteases can also lead to the breakdown of newly formed granulation tissue.

Falanga (1999) has also demonstrated that exudate from chronic wounds can slow or even stop the proliferation of key cells, such as keratinocytes, fibroblasts and endothelial cells. Chronic wound exudate contains an excess of proteases, mainly matrix metalloproteinases (MMPs), which are known to break down peptide links within growth factors and affect the build up of the extracellular matrix (ECM). As the ECM is essential in laying down new cells and capillaries, any disruption to this stage prolongs healing. The proteases responsible for this are the MMPs. MMPs play an important role in cell migration and in the remodelling of the wound post-injury. However, in chronic wounds, the large numbers of MMPs being produced in the exudate can have a negative impact on healing (Parks, 1999).

Many chronic wounds show the stimulation of pro-inflammatory cytokines prolonging the inflammatory phase of healing, resulting in more proteases being produced (Parks, 1999).

Especially when dealing with chronic wounds in the older person, the healing process is affected by a number of local and systemic factors, which are likely to impact on the wound, i.e. the depletion of growth factors. *Table 1* describes the impact of aging on the psychological and physiological well-being of the older person (Falanga, 1999).

Wound dressings

Dressings used in the treatment of chronic wounds are often designed to support healing by absorbing exudate, preventing cross-infection, assisting in debridement and controlling the wound environment. There are, however, few dressings that attempt to control the micro-environment of the wound by influencing the levels of growth factors and proteases in the wound bed — there are even fewer evaluations of such products (Coulomb et al, 2008). One compound that can neutralise MMPs is a healing factor (nano-oligosaccharide factor [NOSF]) (Coulomb et al, 2008).

The Start range

This technology is available in a range of dressings. Urgotul® Start (Urgo Medical) is a contact layer with technology lipido-colloid (TLC) and NOSF for non- to low-exuding chronic wounds. It can also be combined with an absorbent dressing for heavily exuding wounds. UrgoCell® Start TLC (Urgo Medical) is a soft-adherent foam dressing with TLC-NOSF for low to moderately exuding chronic

wounds. NOSF is released when the dressing comes into contact with chronic wound fluid. Start dressings should be commenced as early as possible.

A study of 117 patients by Schmutz et al (2008) examined the performance of Urgotul Start (Urgo Medical) compared with a comparative MMP inhibitor product (oxidized regenerate cellulose dressing [ORC]). The patients involved all had chronic venous leg ulcers. The mean age of the patients was 70 years and the average duration of their ulcers before the study was 11 months. The majority of the wounds tested were static before the commencement of treatment with Urgotul Start. The study demonstrated that Urgotul Start resulted in significantly faster healing rates than the comparative dressing.

In a study of 2000 patients treated with UrgoCell Start, Munter (2008) also demonstrated a 75% reduction in the size of chronic wounds after six weeks of treatment.

Another key requirement of modern wound care therapies is their ability to prevent pain at dressing change. Start dressings can be applied and removed without causing trauma to the wound bed. The study by Schmutz et al (2008) found the Urgotul Start cohort had lower pain scores than the ORC group.

Clinical evaluation

The clinical evaluation featured in this article took place in two main sites, Aberdeen and Stoke. Fourteen patients were recruited (eight females and six males) with an age range of 24–83 years.

The wound types included in the study were:

- ▶▶ Six surgical wounds
- ▶▶ Three traumatic wounds
- ▶▶ Three leg ulcers
- ▶▶ Two pressure ulcers.

The aim of the study was to evaluate the clinical performance of UrgoCell Start TLC. The objectives were to observe the impact of the dressing in preventing chronicity and to gauge the impact of the dressing on the healing of

Table 1

Potential impact of aging on the patient

Social isolation	<p>In extreme old age there is a reduction in the number of friends and family available to help the patient sustain self-care routines</p> <p>Living conditions: elderly people may be poor, with increased risk of injury</p> <p>After retirement there are fewer opportunities to engage with others, or for others to identify problems</p>
Psychological changes	<p>Changes to self-esteem: faced with deteriorating physical function, the elderly person may doubt his or her ability to change their circumstances or solve problems</p> <p>Dealing with multiple health problems undermines morale and may lead to depression, aggression or withdrawal</p> <p>Accumulating physical changes make it harder to sustain standards of self-care and body image is undermined</p>
Physiological changes	<p>Cardiac output drops due to fibrosis and sclerosis in the endocardium. The heart rate slows and there is decreased pulmonary efficiency with increased risk of bacterial growth</p> <p>Gastrointestinal system: patients eat smaller, more frequent meals because of a reduction in gastric secretion. Decreasing taste buds may cause a reduction in appetite. The older person may be prone to constipation</p> <p>Musculoskeletal system: loss of subcutaneous tissue may increase susceptibility to pressure damage. Bone degeneration and reduced joint flexibility occur</p> <p>Senses: the sense of smell and taste decrease. There is a reduction in visual acuity and hearing diminishes</p> <p>Kidneys and genitourinary system: due to a decrease in renal blood flow, there is a reduction in the glomerular filtration rate. A decrease in bladder size and loss of sphincter control may also occur. In males, the prostate may enlarge. In females, oestrogen levels are reduced and there is a decrease in lubrication of the female genital tract</p>

chronic wounds. The cases that follow are taken from patients whose wounds had been present for between six months and five years.

Case report one

This case features a 67-year-old male patient who was referred to the author's tissue viability department with a complex abdominal wound. The patient had cardiovascular disease and type I

diabetes and had previously contracted tuberculosis.

The wound measured 2x2.5cm, was covered with sloughy tissue and was assessed as being critically colonised. There was a mild degree of erythema surrounding the wound, however, it was not thought to be infected (*Figure 1*). Start dressings should not be used on infected wounds — in these cases an



Figure 1: At first review, the wound was covered in sloughy tissue.

antimicrobial dressing can be used before Start is commenced.

Urgocell Start TLC, secured with Mefix® (Mölnlycke Health Care), was commenced. On first review (Figure 2) the slough on the wound had softened and was no longer black in colour, indicating that it was progressively being debrided. After the Urgocell Start TLC was commenced, the wound margins initially increased to 2x3cm, due to the removal of devitalised tissue. The surrounding skin had also improved,



Figure 2: After one week the slough on the wound had softened and was no longer black in colour.



Figure 3: After two weeks of treatment the slough has again reduced and is more superficial. There are also clear signs of vibrant granulation tissue.

possibly due to the impact of the dressing regimen on the inflammatory process.

Figure 3 illustrates the condition of the wound after two weeks of treatment. The wound has reduced in size to 2x2cm (a 20% reduction), the slough has again reduced and is more superficial and there are clear signs of vibrant granulation tissue in the wound. The patient also commented that the pain in the wound had reduced during the treatment period.

Case report two

This case features an 83-year-old woman who presented to the tissue viability service with a leg ulcer measuring 3.5x2.5cm on her left calf (Figure 4). She had previously experienced a deep vein thrombosis (DVT) as well as vascular problems and lymphoedema. The treatment regimen before commencing the study had incorporated an iodine tulle dressing and a foam dressing. In the past, the patient had been treated with modified compression bandaging, followed by compression hosiery. She stated that she had been the recipient of many treatments over the years, yet the wound had remained open. She had been on warfarin since developing the DVT in childhood and her lymphoedema had developed as a result of the DVT. The wound itself was almost 100% sloughy and there was visible erythema around the wound margins.

On first review, the patient had a local anaesthetic applied to the wound, which was then debrided using the Versajet™ Hydrosurgery System (Smith & Nephew) (Figure 5). This uses a fine jet of water to remove layers of devitalised tissue from the wound.

Once granulation tissue had started to develop, the wound was dressed with Urgocell Start TLC — the wound still measured 3.5x2.5cm. The patient's ankle brachial pressure index (ABPI) was calculated as 0.85, therefore compression stockings were applied — these delivered 40mmHg of pressure at the ankle.

Following one week of this new treatment regimen, the wound had reduced in size to 2x1.5cm. Despite a thin layer of slough on the wound bed,



Figure 4: At first review, the wound was almost 100% sloughy and there was visible erythema around the margins.

there was complete granulation visible underneath this. The surrounding skin was no longer erythematous and the patient found removal of the dressing pain free (Figure 6).

Following debridement, the Urgocell Start TLC dressing, which was used for three weeks in total, ensured that a wound which had been present for a number of years progressed towards healing.

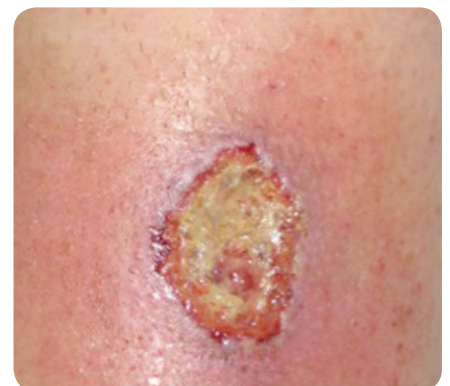


Figure 5: At the initial review, the leg ulcer wound was debrided using a hydrosurgery system.

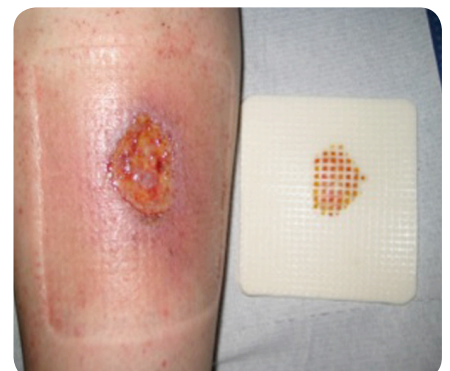


Figure 6: After one week, the patient found removal of the dressing to be pain free.

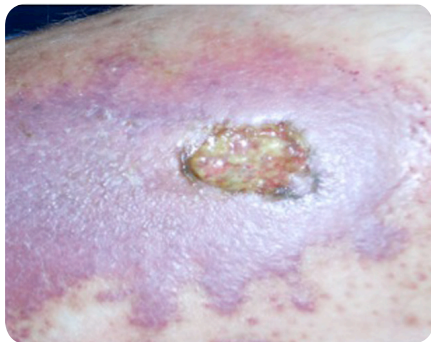


Figure 7: At initial review, the surrounding skin was discoloured due to the long-term disease process.

Case report three

This case features a 40-year-old man who presented with a two-year-old leg ulcer that had failed to heal during this time. The wound measured 2.2x1.6cm and the patient's ABPI was 1.17. KTwo compression bandaging (Urgo Medical) had been applied to the leg to improve the patient's venous function. However, numerous products had been used to try and treat the ulcer over the preceding two-year period with little effect.

On presentation, the wound was sloughy with some granulation tissue visible and the surrounding skin was discoloured as a result of the long-term disease process (Figure 7). However, levels of exudate levels produced by the wound were low.

Urgocell Start TLC was commenced and the combination of the dressing with the compression bandaging reduced the patient's pain. He commented on this within a day of the dressing being applied.

After one week the wound was re-assessed and there were signs of

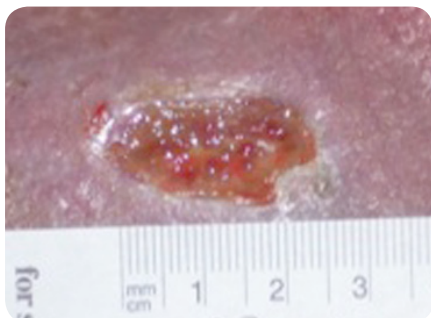


Figure 8: Following one week, there were signs of increasing granulation tissue.



Figure 9: After 13 days, the wound is showing further signs of granulation and contraction.

increasing granulation tissue in the wound bed (Figure 8).

After a further six days, the wound began showing signs of granulation and contraction (Figure 9). The patient continued to comment on the lack of pain, both before and after dressing changes.

After two weeks the wound had continued to decrease in size and there was less staining noted on the upper margins of the wound. A 50/50 cream was applied to the surrounding skin and this helped to maintain hydration.

This wound went on to heal completely over a period of six weeks with the use of Urgocell Start TLC and KTwo compression therapy.

Conclusion

Chronic wounds are by their nature hard to heal and present a significant challenge for patients and healthcare professionals alike. The increased risk of infection, length of treatment times and impact on patient quality of life are all issues which should be considered when wounds fail to heal.

A number of therapies exist that can impact on the wound healing process. For some wounds the main issue is a reduction in bioburden, while for others the main problem is the inflammatory markers which develop as a result of chronicity, patient age and concurrent illness. In addition, the presence of excess proteases within wounds can increase healing times, as they continually erode any newly produced tissue.

Key points

- ▶▶ The burden of chronic wounds is significant for patients and the health service.
- ▶▶ Many factors combine to slow the wound healing process, including concurrent illness and chemical imbalances within the wound bed.
- ▶▶ Chronic wounds require a trigger to get healing started.
- ▶▶ The UrgoCell Start TLC dressing with NOSF has the potential to impact on local imbalances within the wound, neutralise the action of MMPs and allow key cytokines time to act within the wound.

In order to manage wounds appropriately, it is necessary to use dressings that offer a defence against excessive protease action. The case reports featured in this article demonstrate that Urgocell Start TLC can significantly impact on chronic wounds by neutralising the impact of inflammatory proteases and allowing cytokines to flourish. **WUK**

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