Assessing the clinical performance of a new selective mechanical wound debridement product

Wound debridement is an often-ignored area of wound care due to concerns regarding safety and the ability of clinicians to carry out what can be a delicate procedure. This article examines a series of case studies featuring a new selective method of mechanical debridement (Debrisoft®, Activa Healthcare). The paper presents the findings from 18 patients who were selected for a one-off treatment using this new method of debridement.

David Gray, Pam Cooper, Fiona Russell, Sandra Stringfellow

KEY WORDS
Wound management
Debridement
Hyperkeratosis
Haematomas
Soft slough

In 2010, a multidisciplinary group met to consider the role of debridement in wound management (Gray et al, 2010). One of the key findings of this consensus meeting was that access to debridement should be decided by clinical need, not the skill level of the practitioner.

One of the challenges identified was the level of skill required when using debridement methods, such as sharp debridement, hydrosurgery and ultrasonic therapy. The use of autolytic debridement and larval therapy were seen as two options open to the generalist practitioner without referral to a specialist. Mechanical debridement was reviewed by the group as being non-selective and potentially harmful, as the method traditionally used was wet-to-dry gauze.

Recently, a new selective method of mechanical debridement, Debrisoft® (Activa Healthcare), has been introduced to the market and this article details the results of an evaluation by the authors.

Debrisoft is a 10x10cm square of monofilament polyester fibres with a reverse side that is secured with polyacrylate. The wound contact side is fleece-like and designed to mechanically remove slough and devitalised cells. Debrisoft is moistened and passed over the wound area with the clinician applying the necessary amount of pressure. Debrisoft integrates devitalised tissue and debris into its structure (Bahr et al, 2011).

Debrisoft has been available in the UK since January, 2011. Bahr et al (2011) conducted a multi-centred prospective study on 60 patients who required wound debridement. This study found that the method of debridement was effective in 94% of the cases who were treated on three occasions, approximately four days apart. The patients found the treatment to be pain free.

The aim of the evaluation detailed in this paper was to establish, where possible, the types of slough and necrotic tissue that benefit most from mechanical debridement. This paper presents the findings from the 18 patients who were selected for a one-off treatment with Debrisoft. Tap water was used as per local practice.

In the authors' opinion, it became apparent that three different types of

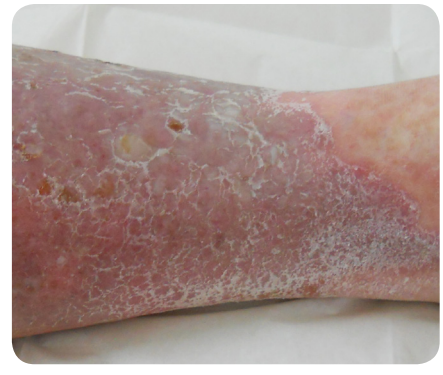

Figure 1. Leg with venous staining and skin changes.

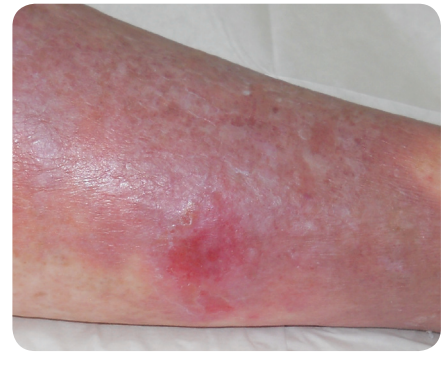

Figure 2. Leg following a five-minute single treatment with Debrisoft.

David Gray is Clinical Nurse Specialist, Department of Tissue Viability, NHS Grampian, Aberdeen and Visiting Professor, Tissue Viability Practice Development Unit, Birmingham City University; Pam Cooper, Fiona Russell and Sandra Stringfellow are all Clinical Nurse Specialists, Department of Tissue Viability, NHS Grampian, Aberdeen

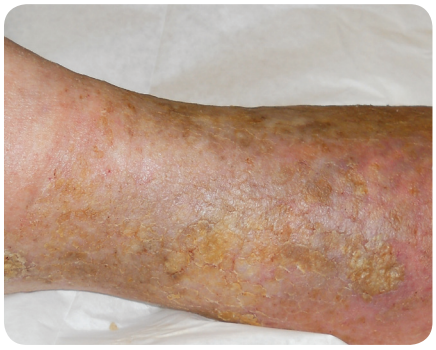

Figure 3. Venous staining and dry skin pre-treatment with Debrisoft.

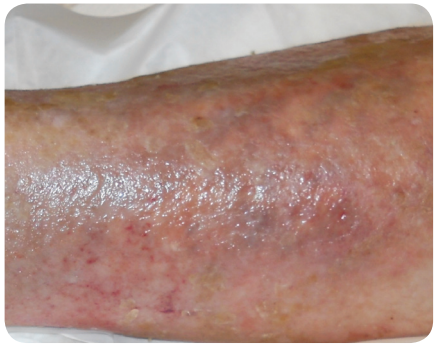

Figure 4. Following a 10-minute single treatment with Debrisoft.

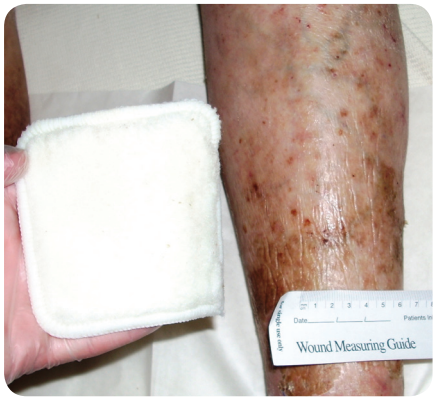

Figure 5. Outcome when skin is well-impregnated with emollient.

clinical situation lent themselves to successful application of this product, namely:

- Hyperkeratosis
- Haematomas
- Soft slough, i.e. not firmly fixed to the wound bed.

Where dry, black necrosis or slough had adhered to the wound bed, it was found that Debrisoft did not remove the devitalised tissue. However, Bahr et al (2011) present images of a case where black necrotic tissue was removed using this product, thus this may not always be the case. In the Bahr et al (2011) study, sterile saline or polihexanide was used as the hydration fluid for Debrisoft, in keeping with local practice.

Hyperkeratosis of the lower limb

In *Figure 1*, the lower limb of an 86-year-old male can be seen with extensive hyperkeratosis. *Figure 2* shows this limb after five minutes of treatment with Debrisoft.

The same findings were evident in case 2, with *Figures 3* and *4* demonstrating the results of using Debrisoft to treat the lower limb of a 96-year-old male. The authors found that Debrisoft removed hyperkeratotic skin with warm water in less than 10 minutes in cases where the skin was dry but had not been treated with an emollient. *Figure 5* shows the results of trying to use Debrisoft on a lower limb, which also had an emollient applied in the hours before treatment (the manufacturers recommend that emollients are always washed off before the use of Debrisoft).

Haematoma

The pre-tibial haematoma in *Figure 6* had been debrided using a scalpel to reveal soft haematoma debris, which was cleared using a single piece of Debrisoft (*Figure 7*). After five minutes of treatment, the wound bed was

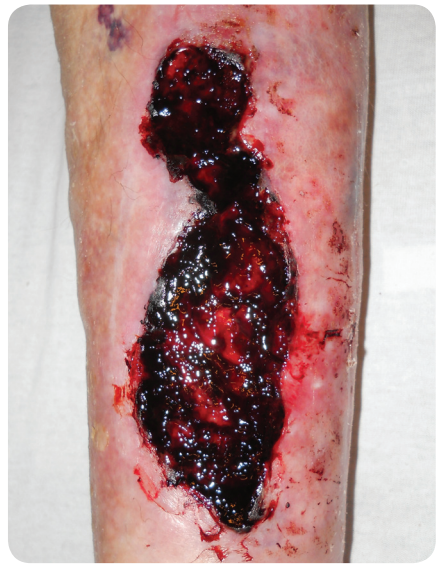

Figure 6. Tibial haematoma pre-treatment.

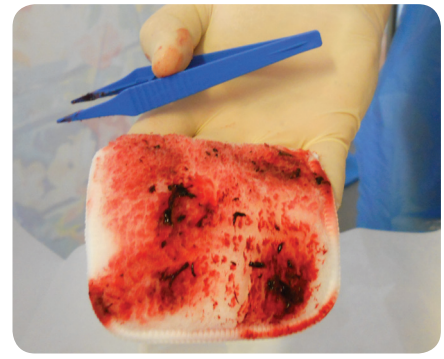

Figure 7. Piece of Debrisoft following a five-minute treatment.

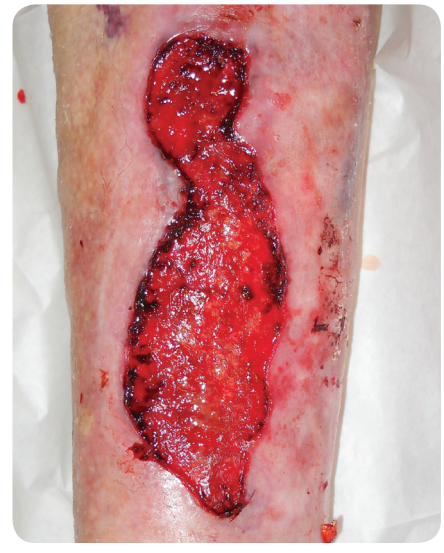

Figure 8. Tibial wound following single treatment with Debrisoft.

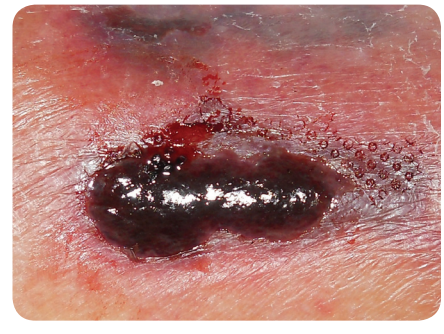

Figure 9. Tibial wound pre-treatment.

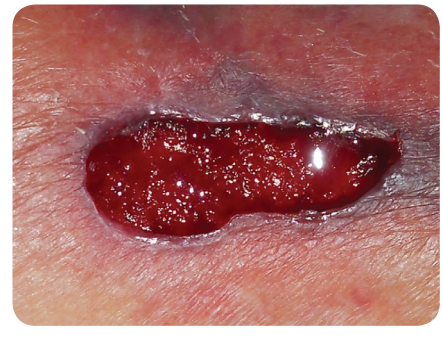

Figure 10. Following single five-minute treatment.

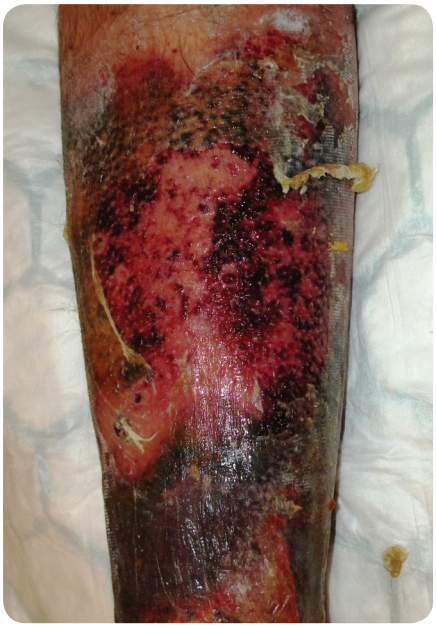

Figure 11. Haematoma and blistered skin following infection.

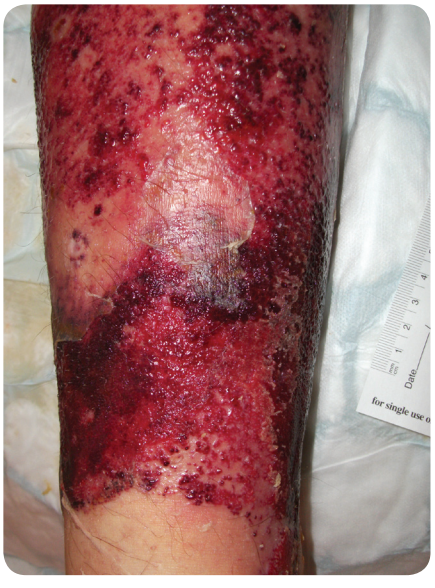

Figure 12. Limb following a 10-minute single treatment.

cleared of haematoma, as seen in *Figure 8*. A similar outcome was observed in the next haematoma case, where a smaller pre-tibial haematoma was removed in less than five minutes using Debrisoft (*Figures 9* and *10*). The final haematoma with skin loss included in this evaluation, had developed secondary to infection and was treated with intravenous (IV) antibiotics after treatment (*Figure 11*). The majority of the haematoma was cleared from the wound bed using one piece of Debrisoft (*Figure 12*).

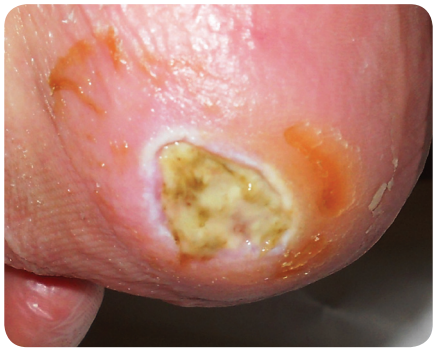

Figure 13. Heel ulcer before treatment.

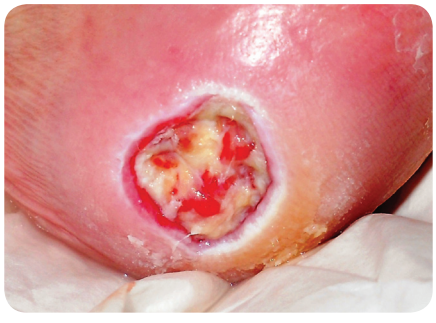

Figure 14. Partial debridement of heel following a 10-minute single treatment.

Slough

In the case of a pressure ulcer to the heel, Debrisoft was used to remove slough from the wound bed (*Figure 13*). *Figure 14* shows the treatment to have been partially successful. In the authors' opinion, this would appear to be the result of Debrisoft removing slough, which was loosely adhered to the wound bed. The slough that remained appears to be well-adhered to the wound bed, requiring another method of debridement for removal (alternatively, a second treatment with Debrisoft at the next dressing change might reduce the need for more expensive methods of debridement).

A similar result was observed in another heel ulcer. *Figures 15* and *16* show how the majority of slough was removed, but a small amount which was well-adhered remained in place.

Sloughy leg ulcers were also treated. In the first case (*Figure 17*), the patient presented with an unhealthy wound bed and a build-up of skin around the periwound area. A single piece of Debrisoft was used to remove debris from the wound bed and the peri-wound area (*Figure 18*).

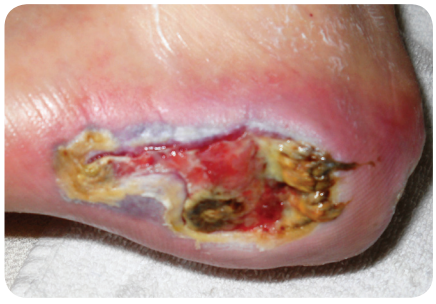

Figure 15. Heel ulcer with different types of slough present.

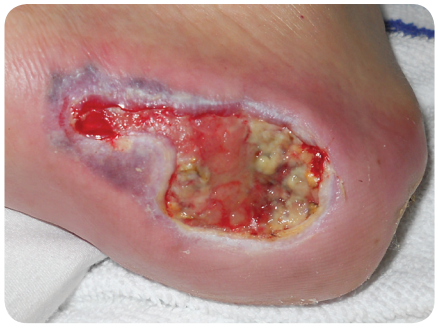

Figure 16. Heel ulcer following a 10-minute debridement session.

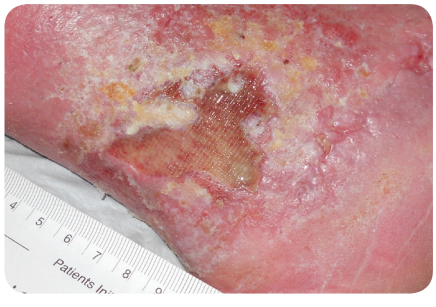

Figure 17. Leg ulcer with sloughy wound bed and an unhealthy periwound area.

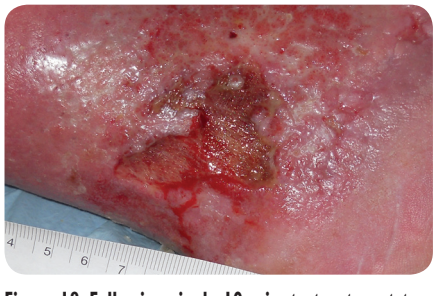

Figure 18. Following single 10-minute treatment to the wound bed and periwound area.

Similarly, another long-standing leg ulcer presented with soft slough and dressing debris in the wound bed and an unhealthy build up of dead skin around the periwound area (*Figure 19*). After a single treatment lasting 10 minutes, the wound and periwound area were cleared of debris and slough (*Figure 20*).

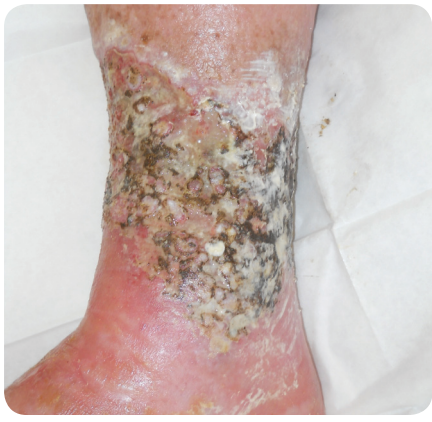

Figure 19. Leg ulcer pre-treatment with Debrisoft.

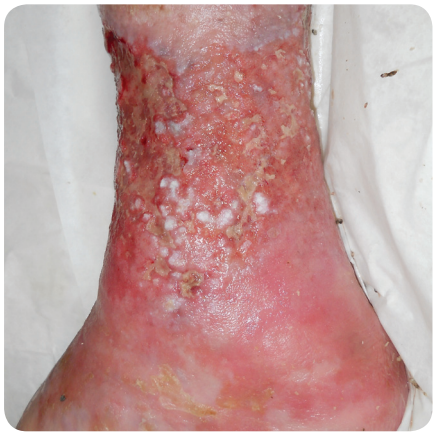

Figure 20. Following 10-minute single treatment.

Discussion

In cases where limbs had not recently been treated with emollients, the authors achieved positive results in removing hyperkeratotic skin from the lower limb. Warm tap water was used to moisten Debrisoft and in one case it was used while the patient's leg was in a bucket of warm water.

If there was emollient on the limb, the authors found that Debrisoft tended to glide across the surface of the wound as opposed to adhering to the cells (as mentioned above the manufacturers recommend that emollients are always washed off before the use of Debrisoft).

Patients did not complain of pain or discomfort during the procedure. Where the Debrisoft was used to remove haematoma debris from the wound, the authors found it initially beneficial in clearing the blistered skin from across the surface. This was achieved using a pair of forceps.

In the case of the larger haematoma in *Figures 6* and *8*, the authors used a scalpel to debulk the haematoma and softened it overnight using ActiformCool® sheet hydrogel dressing (Activa Healthcare). It would be possible for a generalist practitioner to achieve a similar result by debulking the haematoma using plastic forceps. Again, in this group, patients acknowledged occasional discomfort during the procedures, which lasted minutes, but found the treatment to be acceptable overall.

In the heel ulcer cases it was clear that Debrisoft effectively removed soft slough from the wound bed, but was unable to remove well-adhered tissue. In each case there was significantly less slough present after treatment than before. However, it is worth recognising that not every type of sloughy or necrotic tissue will be removed from the wound bed and manufacturers' guidance should always be followed.

In the cases in this evaluation, the wounds were partially debrided but the authors would not recommend use of this product where the slough or necrosis is well-adhered to the wound bed. Where the cases involved long-standing leg ulcers with peri-wound areas and wound beds that required debridement, Debrisoft worked effectively in the presence of soft slough. Warm tap water was used as the agent to wet the Debrisoft and it was found that the slough adhered easily to the product and significant results were achieved. Only one of the 18 patients was unable to tolerate the use of Debrisoft, with all the others finding the treatment acceptable, despite no local anaesthesia being used.

Overall, the authors gained the impression that Debrisoft removed debris easily when used in wounds with soft slough or haematoma that was not well-adhered. Similarly, where used on hyperkeratotic limbs that were not moist with emollients the debris was easily removed. The skill required was minimal and allowed wound beds to be cleared of debris quickly and efficiently without recourse to more specialist methods of debridement.

Conclusion

Wound debridement is an often ignored area of wound care due to concerns regarding safety and skill levels (Gray et al, 2010). However, it should be clear to every practitioner that allowing devitalised tissue to remain in the wound bed unless there is a strong clinical argument for doing so is counter-productive. The increased risk of malodour and infection do not aid wound healing and often patients are treated using autolytic methods of debridement, which take longer than other methods because this is the only method the practitioner feels sufficiently skilled or empowered to deliver.

With the advent of larval therapy in bags (Biomonde) as well as the inexpensive Debrisoft product featured in this article, there are now options for the generalist practitioner to deliver methods of debridement that do not require specialist training. Nor do they carry the potential for harm to the patient associated, for example, with sharp debridement.

The authors' experience would suggest that, where targeted correctly, this debridement method can offer a quick, effective and safe method of debridement, which could have clinical and economic benefits by shortening the time required to debride wounds, thus reducing the time to healing.

Costs associated with extended care should always be considered in any care plan and, therefore, any method that reduces treatment time and overall treatment cost has positive budgetary implications. WUK

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