

# Case studies: Octenilin Wound Irrigation Solution and Octenilin Wound Gel in practice

## KEY WORDS

- ▶ Chronic wounds
- ▶ Delayed healing
- ▶ Wound gel
- ▶ Wound irrigation
- ▶ Wound cleansing

The following case studies assess the effects of Octenilin Wound Irrigation Solution and Octenilin Wound Gel (octenilin® range, schülke) on non-healing wounds — for example, wounds with necrotic tissue, slough, and/or wounds that are critically colonised, or wounds that are locally infected (including with MRSA). A variety of non-healing wounds were assessed, including a venous leg ulcer, diabetic foot ulcer and pressure ulcers.

**C**hronic wounds and delayed healing have been associated with increased bacterial bioburden. The Octenilin range is designed for use on chronic/non-healing wounds; wound bed preparation and cleansing (e.g. with Octenilin Wound Irrigation Solution) forms an important first step in management (Schultz et al, 2004). This should be followed by encouraging a moist wound environment for optimal healing (e.g. with Octenilin Wound Gel).

## OCTENILIN WOUND IRRIGATION SOLUTION

Octenilin Wound Irrigation Solution is designed for cleansing and moisturising chronic wounds and burns, and can also be used to loosen encrusted dressings. It has been found to effectively and rapidly remove necrotic tissue, slough and debris from the wound bed, and is particularly suitable for difficult-to-access areas, such as fissures and wound pockets.

Octenilin Wound Irrigation Solution has also been found to be effective both in preventing biofilm, and removing established biofilms. Laboratory testing demonstrated that the product was effective against *Staphylococcus aureus* biofilms, with an exposure time providing almost complete removal of a 24-hour established biofilm (Cutting and Westgate, 2012).

## OCTENILIN WOUND GEL

Octenilin Wound Gel is designed for cleansing, moistening and decontaminating encrusted,

contaminated and chronic wounds. It is suitable for use on all wound types, including burns, pressure ulcers (PUs), leg ulcers and any type of skin wound. The gel can be used alone or with the irrigation solution to loosen difficult-to-remove wound coatings, moisten dry wounds and protect against microbial contamination to the wound.

In a placebo-controlled, double-blind, randomised controlled study (Eisenbeiss et al, 2012), Octenilin Wound Gel was found to reduce bioburden. A further study (Strohal et al, 2013) demonstrated that patients using Octenilin Wound Gel experienced reduced pain on dressing change, significantly faster decrease of the wound area, and reduced clinical costs.

## OCTENILIN IN PRACTICE

The following case studies demonstrated that Octenilin Wound Irrigation Solution and Octenilin Wound Gel were both effective and easy to use in practice. When used in chronic wounds that had previously failed to progress, they were found to contribute to increased healing and were rated highly by both clinicians and patients.

### CASE 1

#### Background

The patient is a 69-year-old male with type 2 diabetes (diagnosed in 2007), neuropathy and peripheral vascular disease. The patient had a left below-knee amputation in 2012. The patient's medications include insulin, pioglitazone, aspirin, metformin, clopidogrel and atorvastatin.

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### Clinical assessment

The patient presented in the podiatry department with a diabetic foot ulcer (DFU). The wound had been present for 4 months, following the amputation of his right first and second toes due to severe infection/gangrene following a previous DFU. The current DFU had formed at the amputation site on the right foot.

The healing process had stalled and the wound failed to progress within the expected timeframe. Previous treatments had included alternative dressings (including silver dressings) and negative pressure therapy for 2 weeks post-surgery.

The wound at presentation measured 63 mm in length, 42 mm width, and 4 mm depth. The wound bed was made up of 30% granulating tissue and 70% slough. High levels of serosanguinous exudate were present, as well as a high level of well adhered slough and a 'slimy' layer covering the whole wound bed.

The wound was categorised as clinically colonised, due to the high levels of exudate and general colour/condition of the wound bed. The presence of biofilm was suspected, due to the length of time that the wound had been present and its failure to progress.

The surrounding skin was macerated, dry and flaky. The wound was not painful, due to the patient's neuropathy.

### INITIAL APPLICATION

The decision was made to commence treatment with Octenilin Wound Irrigation Solution, in order to aid healing by removing debris and devitalised tissue from the wound bed. The decision was also made to use Octenilin Wound Gel to remove slough and create a warm, moist healing environment.

On initial application, the wound bed was washed with Octenilin Wound Irrigation Solution, then gauze soaked in the solution was left on the wound for 5 minutes. The surrounding skin was then wiped and Octenilin wound gel applied.

Ease of application was rated as 'excellent' for the irrigation solution, and 'very good' for the wound gel. The patient was advised to stop using the products if any skin irritation occurred.

A secondary dressing was applied, with a planned dressing change every 2 days. The patient,



Figure 1. Case 1: The wound on initial assessment

who uses a wheelchair, was also using a sandal with padding for offloading.

### Week 1

At Week 1, the dressing was easily removed. Interim dressing changes had been conducted by district nurses. The wound had improved and signs of healing could be observed. The wound bed was described as looking healthier, with more granulation tissue and no presence of the 'film like' appearance that was observed before treatment using Octenilin.

The wound was measured at 62 mm length, 35 mm width, and 5 mm depth. The wound bed now consisted of 75% healthy granulation tissue, with some (25%) well adhered slough still present at the inferior edge. The surrounding skin was mainly healthy, with some slight maceration to the inferior edge. Exudate levels had reduced, with moderate levels of serous exudate.

The clinician and patient were both satisfied with the treatment and the progression of the wound. Seeing some improvement in his wound lifted the patient's mood and had a positive impact upon his quality of life.

The decision was made again to cleanse the wound with Octenilin Wound Irrigation Solution and to treat again with Octenilin Wound Gel. The dressing was subsequently reapplied, with dressing change planned to continue every 2 days.

### Week 2

The wound had continued to improve, with further signs of healing. The level of slough had continued to reduce (80% good granulation tissue, 20% slough), with the slough being less well adhered



Figure 2. Case 1: The wound at Week 1



Figure 3. Case 1: The wound at Week 2



Figure 4. Case 1: The wound at Week 3



Figure 5. Case 1: The wound at Week 4

and thus easier to remove via sharp debridement.

The wound had reduced slightly, measuring 61 mm length, 35 mm width, and 5 mm depth. The periwound area still showed some slight maceration, but had improved. Levels of serous exudate remained moderate.

The clinician and patient continued to be satisfied with the progress of healing under this treatment. The speed of healing had increased, with the patient able to see a noticeable difference.

The decision was made to cleanse the wound once again using the Octenilin Wound Irrigation Solution and to continue using Octenilin Wound Gel. The dressing was reapplied, with a plan to continue to change the dressing every 2 days. The patient was instructed to monitor the wound for any signs of infection developing.

### **Week 3**

The wound bed was again reported as looking healthier, with progress to healing continuing to

be made. Slough was still present but reducing and able to be removed more easily (85% healthy granulating tissue, 15% slough).

The overall wound size had reduced slightly, with very slight maceration to the inferior periwound area. Exudate levels had reduced further, but could still be classed as moderate (rather than low).

The clinician and patient both continued to be 'highly satisfied' with progress. The patient was reported to be happier, as he was able to see continued improvement to the wound.

The decision was to repeat cleansing with Octenilin Wound Irrigation Solution and to continue use of Octenilin Wound Gel. Dressing change continued to be planned for every 2 days.

### **Week 4**

The wound had again continued to improve, with increased signs of healing. During interim dressing changes, district nurses had noted the improvement. The wound bed was described



Figure 6. Case 2: The wound at initial assessment



Figure 7. Case 2: The wound after initial treatment

as healthier, with more granulation tissue appearing and epithelialisation on the superior edge of the wound.

The wound had become much less deep — now measuring 58mm length, 32mm width and 0.5mm depth. Slight maceration was present to the bottom edge of the wound, but otherwise the periwound skin was healthy. Exudate levels had reduced and were now classed as low.

Patient and clinician continued to be highly satisfied with treatment progression, with the patient continuing to be able to see an improvement. The decision was made to continue treatment with Octenilin Wound Irrigation Solution and Octenilin Wound Gel.

### CASE 2

#### Background

The patient is a 73-year-old female with angina, ischaemic heart disease, osteoarthritis of both knees and varicose eczema. The patient's medications include aspirin, a statin and hypertensives, plus regular codeine and paracetamol for pain management.

#### Clinical assessment

The patient presented to the hospital wound healing unit with a painful recurrent venous ulceration on the left malleolus. The wound was non-healing and had been present for 1 year.

The wound measured approximately 190 mm<sup>2</sup> on first assessment, with encrustation at the edges. The wound showed a mixture of necrosis, dried blood and other wound exudate.

The wound was previously being treated using compression bandaging, but the patient could not tolerate high levels of compression. Healing had stalled and the wound not progressed within the expected timeframe.

The wound bed was in poor condition, described on examination as inflamed, with 25% granulating tissue and 75% necrotic tissue. The presence of necrotic tissue, increased pain and the wound's non-healing status led the wound to be classified as critically colonised, but was not overtly infected. The presence of biofilm was suspected and microbiology results showed that anaerobes with enteric flora were the main coloniser.

Some malodour from the wound was present, but only when the wound was exposed — this was

described as 'not very pungent' and when dressed the patient rarely noticed it.

The surrounding skin was inflamed and there were moderate levels of serous exudate. The wound was very painful, being rated by the patient as 8 on a 1–10 pain scale.

#### Initial application

The decision was made to use Octenilin Wound Gel in order to rehydrate necrotic and devitalised tissue and reduce bacterial contamination. A thin layer of the gel was applied to the wound bed, covered with a secondary dressing and reduced three-layer compression bandaging, as the patient was unable to tolerate higher levels of compression. Ease of application of the wound gel was rated as 'excellent'.

Dressing change was planned after 3 days, and the patient was instructed to elevate the limb and given advice about nutrition and healthy living in the meantime.

#### Post-treatment

The dressing was changed every 3 days, with the decision made to continue treatment with Octenilin Wound Gel at every dressing change.

The wound was found to have improved with treatment and there were signs of healing. After 6 weeks of treatment, the wound size had reduced to approximately 90 mm<sup>2</sup>, based on wound mapping. The wound bed was classified as 40% epithelialising, 30% granulating and 30% sloughy. The devitalised tissue was able to be debrided easily and although some slough was present, this was fibrinous and also removed using debridement techniques. The surrounding skin was less inflamed, and healing at the edges.

Some odour was still reported as being present, but this was improved. Levels of serous exudate were now low.

The patient reported reduced pain, at 4–5 out of 10 on the pain scale, reporting that her quality of life has also improved as she was able to see a notable improvement in the wound and an increased possibility of being 'ulcer free' in the future. The patient's ability to tolerate compression therapy was also increased over the 6 weeks of treatment. Patient and clinician both reported being 'highly satisfied' with the treatment and its outcomes.



**Figure 8. Case 3: The wound at initial assessment**

The decision was made to continue treatment with Octenilin Wound Gel and to cleanse the wound as necessary with Octenilin Wound Irrigation Solution.

### CASE 3

#### Background

The patient is a 72-year-old female. She was found on the floor in the hallway of her home, having had a cerebrovascular accident (CVA). She was initially admitted to the acute trust and was later transferred to a care home. Upon initial admission to the acute trust, she was found to have a Grade 3 PU to the sacrum. The duration of the PU was unknown, estimated to be over 6 weeks. The patient is diabetic and also takes insulin.

#### Clinical assessment

On initial assessment, the wound measured 90 mm in length, 60 mm depth and 70 mm width. The PU had previously been treated using a silver dressing, but the wound healing process had stalled and failed to progress within the expected time frame.

The wound bed comprised 90% granulating tissue and 10% slough, described as appearing to be in an unhealthy condition and very dull in colour. The wound was classified as critically colonised and infected, due to its non-healing status. The surrounding skin was macerated.

Exudate levels were classified as moderate, with the exudate described as serous. The wound was painful, rated by the patient at 4 on the pain scale.

#### Initial application

The decision was made to use Octenilin Wound Irrigation Solution in order to reduce the bacterial

load. The ease of application was rated as good. The wound was irrigated and a foam dressing was used. Dressing change was planned every 72 hours, with the irrigation solution to be used at each dressing change.

The patient was confined to bed rest, so all appropriate pressure relief measures were put into place concurrent with treatment for the existing PU.



**Figure 9. Case 3: The wound at the end of treatment with Octenilin**

#### Week 1

The initial and interim dressing changes in Week 1 were by a staff nurse, and described as being easy to do. The wound was still painful at dressing change, remaining at 4 on the pain scale as described by the patient.

Although there were no signs of healing in terms of reduction of wound size, the condition of the wound was reported to have improved. The wound bed was healthier in colour and 'not as pale-looking' — although it was still pale, the colour was improving. Granulation tissue had increased – the wound bed was 95% granulating and 5% slough.

The surrounding skin was macerated and the very edge of the wound was wet, indicating that peri-wound protection needed to be used. Exudate levels were moderate and the exudate was classified as serous.

Both clinician and patient reported being satisfied with the treatment. The decision was made to continue using Octenilin Wound Irrigation Solution as it was helping the wound to improve. The patient was also described as being more settled, although still on bed rest. The nurse described ease of application with the solution as 'very good'.

#### Week 2

The dressing change by the staff nurse was again described as easy. The dressing change was now painless, as described by the patient.

There were now signs of wound healing and the wound bed continued to improve. The wound bed now looked healthy and in good condition, although the wound remained the same size (with 95% granulation tissue, 5% slough). The surrounding skin was described as macerated, but with no deterioration as a barrier product was used. Serous exudate continued at moderate levels.



**Figure 10.** Case 4: The wound on initial assessment



**Figure 11.** Case 4: The wound at Week 1



**Figure 12.** Case 4: The wound at Week 2

The patient was highly satisfied with the treatment. Both the patient and her family were happy with the improvement observed. The decision was made to continue using Octenilin Wound Irrigation Solution as it appeared to be working well. The decision was also made to use negative pressure wound therapy (NPWT).

### Week 3

The dressing changes were again straightforward and pain-free. The patient was now tolerating NPWT well.

The wound bed looked healthy, improved in colour and showed evidence of healing and increased granulation tissue. The wound size had decreased slightly to 90mm in length, 40mm depth and 70mm width. The wound bed now consisted of 100% granulating tissue. With use of the barrier product, the surrounding skin had improved and now appeared healthy. Exudate type and levels remained unchanged.

The clinician and patient were highly satisfied with the treatment. The patient and her family stated that they couldn't believe the improvement. The decision was made to continue with Octenilin Wound Irrigation Solution and NPWT as the wound was continuing to improve under this regimen.

### Week 4

The wound continued to improve further and wound depth had decreased to 30mm. The wound was granulating well and the wound bed and surrounding skin appeared healthy. Exudate levels had dropped and were now classified as low.

The patient and clinician remained highly satisfied with the treatment. The patient was now more

mobile and able to get up for 30 minutes at a time. She was now more able to socialise, and was able to begin rehab.

The wound had improved to the extent that it was unnecessary to continue treatment with Octenilin Wound Irrigation Solution.

## CASE 4

### Background

The patient is a 62-year-old male, who is paraplegic following a road traffic accident. He has previously undergone an aortobifemoral graft for peripheral vascular disease. He also suffers from hypertension and takes lisinopril and amlodipine.

### Clinical assessment

The patient presented with a PU, which was sustained when the patient knocked the side of his foot as he transferred from his wheelchair into his car. The wound had been present for over 3 years.

On presentation, the wound measured 22mm in length, 14mm depth and 20mm width. Healing had stalled and the wound had failed to progress within the expected timeframe. The wound bed consisted of 50% granulating tissue and 50% slough.

The wound was not classified as infected. However, it was classified as clinically colonised, due to the fact that the wound was found to deteriorate if an antimicrobial was not used; additionally, the wound bed was found to bleed easily and the wound was generally failing to progress. For these reasons, the presence of biofilm was also suspected, and the wound bed was regularly debrided in order to disrupt potential biofilm.

The surrounding skin was dry and flaky. Exudate levels were low, and exudate classified as serous. The wound was not painful, due to the patient's paraplegia.



Figure 13. Case 4: The wound at Week 4

### Initial application

The decision was made to use Octenilin Wound Irrigation Solution, in order to cleanse the wound and disrupt biofilm, and to use Octenilin Wound Gel, in order to debride slough.

Application of both the irrigation solution and wound gel was rated as excellent. The irrigation solution was applied using gauze; followed by the wound gel, which was applied from the tube directly onto the wound bed.

A secondary dressing was applied, with planned dressing change every 72 hours. The patient was non-weight bearing, so precautions were taken to ensure that the patient was using the appropriate mattress. The patient conducted his own interim dressing changes and was given instructions on application of the treatments.

### Week 1

The dressing was reported as being easy to remove. The wound had decreased in size, with some signs of healing: measuring 19 mm in length, 1 mm depth and 9 mm width. The wound bed consisted of 50% granulating and 50% sloughy tissue, with the clinician commenting that the slough appeared thicker. The surrounding skin was healthy and exudate remained unchanged.

The decision was made to continue treatment with both Octenilin Wound Irrigation Solution and Octenilin Wound Gel, and the patient was happy to continue with the treatments. Dressing change would continue every 72 hours.

### Week 2

The patient's wife conducted interim dressing changes and found the dressing easy to remove.

There were signs of improvement to the wound and progress to healing. More granulation tissue was present, with less slough and islands of epithelium. Exudate was classified as haemopurulent and levels remained low.

The surrounding skin was fragile, dry and flaky. The wound edge was calloused, and was debrided.

The patient was happy with treatment and with the wound's progress, and the decision was made to continue with the treatment regimen.

### Week 3

Dressing removal was again reported as easy, with the clinician noting that a crust had formed to the wound edge. The wound had improved, with increased signs of healing. No slough was present, only fibrous tissue. More epithelialised tissue was present, with the wound bed classified as 50% epithelialising, 30% granulating tissue and 20% fibrin. The surrounding skin remained dry and fragile.

The decision was made to continue with the treatment regimen, as the wound was responding to the treatment and the patient was happy.

### Week 4

The wound appeared healthy, with no crust or sticking to the dressing. The wound showed signs of improvement, although the surrounding skin was still fragile. Wound size had reduced to 15 mm length, 1 mm depth and 7 mm width. The wound bed now consisted of 60% epithelialising and 40% granulating tissue. Exudate levels remained low.

The patient was satisfied with the improvement that the treatment had achieved, and the decision was made to continue with treatment to full healing.

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