

Use of octenidine dihydrochloride in managing chronic wounds: a case series



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This case series reports on the effectiveness of octenidine dihydrochloride (octenidine) to promote wound healing in chronic, hard-to-heal wounds. We present the results of four randomly recruited patients, two with venous leg ulcer and two with a diabetic foot ulcer (DFU). All of the patients' wounds were cleansed with octenidine-based solutions. The patients were assessed using the TIME (Tissue, Infection or Inflammation, Moisture balance and Edges of the wound or Epithelial advancement) assessment tool, the Harikrishna Periwound Skin Classification (HPSC) and visual analog scale for pain. All the wounds were HPSC Class 2 and Class 4 and both DFUs were infected. Our results demonstrated that octenidine was effective in promoting wound healing for chronic, hard-to-heal wounds with no reported side-effects.

Key words:

- Antiseptic
- Chronic
- Octenidine
- Tolerance
- Wound

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It is estimated that approximately 1–2% of the population in developed countries will suffer from a chronic wound in their lifetime (Järbrink et al, 2016). In contrast, in a developing countries, such as Malaysia, it is estimated that a higher proportion, approximately 5–10% of the population, will suffer from chronic, hard-to-heal wounds (Nair et al, 2022). Many of them are associated with complications, such as diabetes, vascular disorders and/or other comorbidities.

Patients with hard-to-heal wounds may experience multiple complications, such as chronic pain, loss-of-function and mobility, increased social stress and isolation, depression and anxiety, increased financial burden, and also mortality, all of which will impact the quality-of-life (QoL) of both the patient and their family. Octenidine is an established antiseptic and represents an alternative to other antimicrobial agents, such as chlorhexidine, povidone-iodine and polyhexamethylene biguanide (Hübner et al, 2010).

In this case series, octenidine-based treatment was used to treat patients with chronic wounds to determine its efficacy, safety and tolerability.

Methodology

These case reports detail the findings of patients who received treatment at the wound care clinic at Kuala Lumpur Hospital, Kuala Lumpur, Malaysia. Patients with venous leg ulcers (VLU) or diabetic foot ulcers (DFU) were recruited at random. The patients were assessed using TIME (Tissue, Infection or Inflammation, Moisture balance and Edges of the wound or Epithelial advancement) assessment (Nair, 2022), Harikrishna Periwound Skin Classification (HPSC; Table 1; Nair, 2017) and visual analog scale (VAS; Figure 1). All patients' wounds were HPSC Class 2 or Class 4.

All wounds were cleansed with octenidine-based solutions (either Octenilin® wound irrigation solution or Octenisept® antibacterial cleansing solution) and underwent proper debridement to facilitate the reduction of biofilm burden and to suppress biofilm reformation. After which, Octenisept® Gel was applied. The gel acts by forming a barrier against pathogens and helps loosen the wound coating to ensure healthy tissue growth. Finally, after wound bed preparation, Octenicare® Repair Cream was used to aid regeneration of the skin around the periwound areas to ensure elasticity and to prevent wound breakdown.

The procedures of wound cleansing,

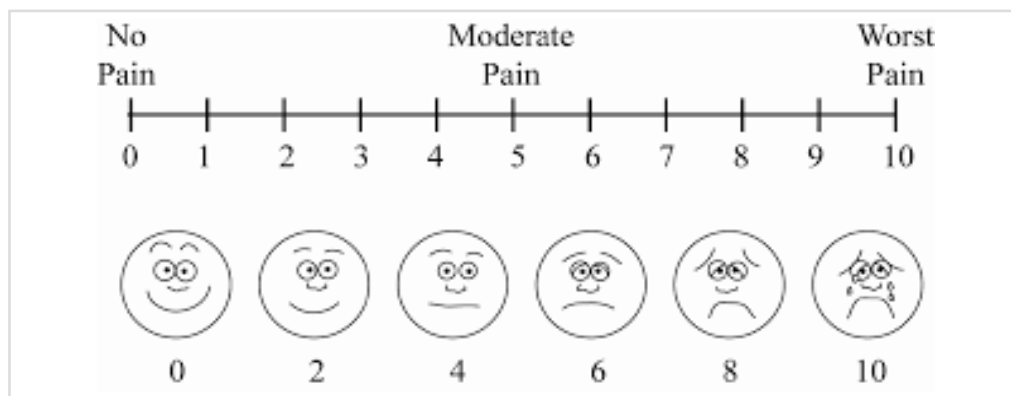


Figure 1. Visual analog scale

Table 1. Harikrishna Periwound Skin Classification (HPSC)

Class	Subtype	Periwound condition
0		Normal
1		Fibrous tissue/tissue at risk
2	A	Exudate centred with desiccation
	B	Exudate centred with maceration
	C	Exudate centred with allergy
3		Inflammation without infection
4		Inflammation with infection
5		Atypical (senescent cells/cancer/subcutaneous emphysema)

Case 1

- Mr AA, 69-year-old male, with an infected diabetic foot ulcer on the left big toe
- Antibiotic treatment: 375mg ampicillin/sulbactam twice daily
- Treatment before octenidine: hydrogel application
- Treatment: Octenilin wound irrigation solution, Octenisept Gel, Octenicare Repair Cream. No extra interventions were used

Result and observation (week 1)

Size: 5.0cm (L) x 2.0cm (W)
 VAS pain score: 1/10
 HPSC: Class 2B



Result and observation (week 10)

Size: 0cm (L) x 0cm (W) (healed)
 VAS pain score: 0/10
 HPSC: Class 1



Case 2

- Mr UD, 54-year-old male, with a diabetic foot ulcer on the right foot.
- Antibiotic treatment: 750 mg ampicillin/sulbactam twice daily
- Treatment before octenidine: hydrogel application
- Treatment: Octenilin wound irrigation solution, Octenisept Gel, Octenicare Repair Cream. No extra interventions were used

Result and observation (week 1)

Size: 8.5cm (W) x 10cm (L)
Pain score: 1/10
HPSC: Class 4



Result and observation (week 13)

Size: 5cm (W) x 6cm (L)
Pain score: 1/10
HPSC: Class 0

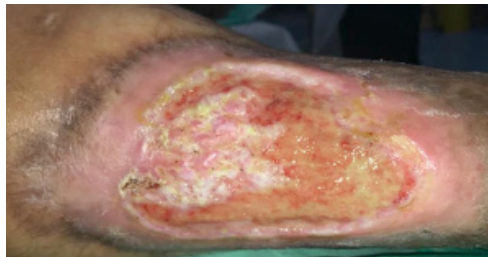


Case 3

- Mr WJ, a 50-year-old male, with a leg venous ulcer on the left leg
- Antibiotic treatment: No
- Treatment before octenidine: hydrogel application
- Treatment: Octenisept antibacterial cleansing solution, Octenisept Gel, Octenicare Repair Cream, No extra interventions were used

Result and observation (week 1)

Size: 9.5cm (L) x 6.5cm (W)
VAS pain score: 1/10
HPSC: Class 2B



Result and observation (week 12)

Size: 9.0cm (L) x 6.0cm (W)
VAS pain score: 0/10
HPSC: Class 2B



application of wound gel and periwound management were repeated 3 times a week in our wound care clinic. Wound progression for each patient was observed over a maximum period of 13 weeks.

Results

Patients were included in the study if they had failed to respond to a minimum four-week

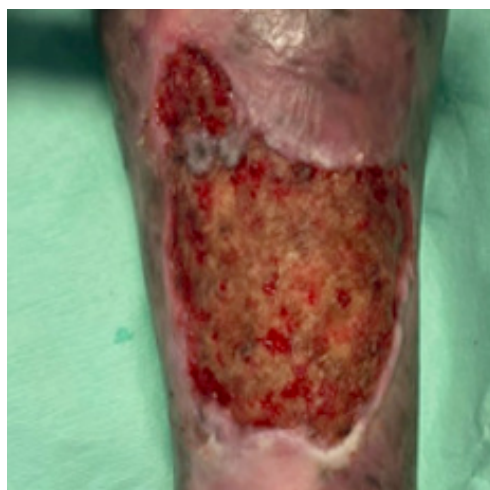
treatment of hydrogel-based wound care products before enrolment. Before enrolment into this study, all patients underwent treatment with two different commercially available hydrogel-based wound care products for a minimum of four weeks, but their conditions did not improve (data not shown). Of the four patients two (Case 1 and 2; both DFUs) had an infected wound at the

Case 4

- Mr KH, a 52-year-old male, with a left venous leg ulcer
- Antibiotic treatment: No
- Treatment before octenidine: hydrogel application
- Treatment: Octenisept antibacterial cleansing solution, Octenisept Gel, and Octenicare Repair Cream. Compression bandages was also used

Result and observation (week 1)

Size: 10cm (L) x 9.5cm (W)
VAS pain score: 1/10
HPSC: Class 4



Result and observation (week 13)

Size: 10cm (L) x 9.0cm (W)
VAS pain score: 0/10
HPSC: Class 1



start of the study. They were being treated with antibiotics (ampicillin/sulbactam). Cases 1–4 show the treatment and condition of the wounds in greater detail.

Discussion

In this case series, we demonstrate that octenidine is effective in promoting wound healing for chronic, hard-to-heal wounds with no side-effects reported during this study (Table 2). All four patients underwent wound debridement to stimulate a better and faster healing process. With the use of these octenidine-based antiseptic products, in combination with oral antibiotics (for the DFU cases), the infected wounds progressively healed without complications. The wound care products used were Octenisept antibacterial cleansing solution, Octenilin wound irrigation solution, Octenisept gel and Octenicare repair cream. Within 13 weeks' these wounds had shown improvement in terms of reduction of their size, promotion of epithelialisation, granulation and reduction in bioburden, all leading to the desirable outcome of a proper wound closure.

Limitations

This is a small case series consisting of only two wound types. Further prospective trials are required to corroborate this work.

Conclusion

This case study series demonstrate the clinical efficacy, tolerance, and safety of using octenidine-based products to promote wound healing in chronic wounds. WAS

Declaration of interest

The authors declare that this study was carried out without any commercial or financial affiliations that could be seen as a possible conflict of interest. The octenidine products were sponsored by Schülke and Mayr (Asia).

References

- Hübner N-O, Siebert J, Kramer A (2010) Octenidine dihydrochloride, a modern antiseptic for skin, mucous membranes and wounds. *Skin Pharmacol Physiol* 23(5):244–258. <https://doi.org/10.1159/000314699>
- Järbrink K, Ni G, Sönnergren H et al (2016) Prevalence and incidence of chronic wounds and related complications: a protocol for a systematic review. *Syst Rev* 5(1):152. <https://doi.org/10.1186/s13643-016-0329-y>
- Nair HKR (2017) The Compendium of Wound Care Dressings & Other Modalities in Malaysia. 5th edn. Malaysian Society of Wound Care Professionals: Kuala Lumpur, Malaysia
- Nair HKR (2022) The Compendium of Wound Care Dressings & Other Modalities in Malaysia. 6th edn. Malaysian Society of Wound Care Professionals: Kuala Lumpur, MalaysiaP
- Nair HKR, Norlizah P, Mariam MN et al (2022) Diabetic foot ulcer in Malaysia: consensus on treatment patterns, health care utilization and cost. *Int J Low Extrem Wounds* 29:15347346221090096. <https://doi.org/10.1177/15347346221090096>