

Treatment of chronic wounds with healus wound gel: a case series



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- Chronic wounds
- Wound bed preparation
- Wound gel
- Wound healing

Abstract: Advanced wound dressings have evolved to do more than just providing moist wound environment for better wound healing. Here we measure the wound healing efficacy of a new hydrogel as shown by the reduction in wound area reduction. This case series includes ten patients with chronic wounds of different aetiologies, diabetes foot ulcers (DFU), infected wounds, postsurgical wounds and pressure ulcers (PU). We included patients with sloughy or necrotic wounds in this study. Wounds were first evaluated by using the TIME concept before cleansing with sterile water. Patients were assessed for pain using the Visual Pain Score of 1 to 10 on each visit. Anscare Healus Wound Gel was applied to the wound as per standard of care (twice a week) and polyurethane foam was used as the secondary dressing. Patient follow-up was twice a week until wound was healed. There was noteworthy improvement in all ten cases in terms of reduction in wound size. The percentage of wound reduction ranges from 83.8% to 100%. There is little to no change in the pain score experience by patients, as most of the patients has diabetes mellitus, this was probably due to diabetic neuropathy. Anscare Healus Wound Gel used in this study, provides a moisture-balanced environment for wound healing while promoting autolytic debridement by using the body's production of enzymes and moisture. The wound gel can soften eschar and replace necrotic tissue, promoting autolytic debridement with superior exudates absorption. The Carboxymethylcellulose Sodium in the gel, has antimicrobial action, antibiofilm action and promotes wound healing by restoring the normal structural and functional characteristics of the skin. Alginate dressings absorb fluid from the wound and help to maintain a physiologically moist environment that minimises bacterial infections at the wound site. The wound gel provides a moisture-balanced environment for the wound bed, keeping the wound bed moist for better wound healing and pain-free experience.

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By definition, wound bed preparation is wound management to accelerate endogenous healing or to facilitate the effectiveness for other therapeutic measures (Schultz et al, 2003). Wound bed preparation is a well-structured approach for the treatment of chronic wounds, first introduced by Dr Vincent Falanga (2000) and Dr Gary Sibbald in (Sibbald et al, 2000). The concept was recognised internationally with regular updates. In the latest 2021 update, wound bed preparation

focuses on the holistic and systemic approach in the treatment of cause, patient concerns and ability of the wound to heal (Sibbald et al, 2021). Wound bed preparation is an important model for proper wound assessment. The mnemonic TIME (T=tissue management, I=inflammation/infection control, M=moisture imbalance, E=edge/epidermal margin) was developed by wound care experts to facilitate wound bed preparation (European Wound Management Association, 2004).

Table 1. The % reduction in wound surface area in 2 to 20 weeks

Case	Diagnosis	Total wound area before (cm ²)	Total wound area after (cm ²)	Percentage of wound reduction (%)
1	Right diabetic foot ulcer	39.1	0.0	100.0
2	Carbuncle	24.0	3.9	83.8
3	Infected lumbo-sacral wound (pressure ulcer)	162.75	33.0	79.7
4	Right diabetic foot ulcer (post below knee amputation)	17.0	0.2	98.8
5	Right diabetic foot ulcer (post 2nd, 3rd, and 4th toes Ray's amputation)	50.0	1.4	97.2
6	Right foot cellulitis	5.9	0.0	100.0
7	Post-appendicectomy surgical wound	5.0	0.0	100.0
8	Right diabetic foot ulcer	12.5	2.0	84.0
9	Right foot abscess	4.8	0.6	87.5
10	Left knee abscess	25.8	2.0	99.9

Tissue management in wound bed preparation includes removing bacterial colonies in non-viable necrotic tissues and cells that hinder conventional wound healing process to progress normally. This process transforms chronic wounds into acute wounds by restoring a viable wound base with functional extracellular matrix (Panuncialman and Falanga et al, 2007). There are various techniques used for wound debridement; surgical, mechanical, biological, enzymatic, and autolytic debridement (Leaper, 2002; Manna, 2021). Judgement by wound care clinician and patient's factors will determine which of these methods suit wound most.

Chronic wounds are often contaminated by bacteria resulting in infection, which can lead to prolonged inflammation and/or high bacterial counts in the wound. This leads to increase inflammatory cytokines and protease activity with decrease growth factor activity of the wound bed. The foci of infection should be removed by antimicrobials and anti-inflammatories to achieve bacterial balance and reduce inflammation.

Moisture imbalance in chronic wounds can impair the normal wound healing process. Desiccation slows epithelial cell migration, while excessive fluid causes maceration of the wound margin. At the epidermal margin, poor moisture balance can lead to non-advancing or an undermined wound edge. This may be due to non-migrating keratinocytes and non-responsive wound cells and abnormalities in protease activity.

Objective

To assess the wound healing efficacy of the hydrogel as shown by area reduction.

Methodology

This case series includes with chronic wounds of different aetiologies, i.e. diabetes foot ulcers (DFU), infected wounds, post-surgical wounds, and pressure ulcers (PU). Patients with sloughy or necrotic wounds were included in this study. Wounds were first evaluated by using the TIME concept before cleansing with sterile water. Patients were assessed for pain using the Visual Pain Score of 1 to 10 on each visit. As most of the patients has underlying diabetes mellitus, there would be little to no change in the pain score experience by patients, due to diabetic neuropathy. Anscar Healus Wound Gel (BenQ Materials Corporation) was applied to the wound as per standard of care, twice a week. Polyurethane foam was used as the secondary dressing. Patient follow-up was twice a week until wound was healed. DFUs were offloaded using paddings, while for PU patients 2-hourly positioning and proper support surface were advised.

We used a disposable ruler to measure the length and width to determine wound area. This was done at each visit.

The trial was conducted in accordance with the guidelines set in the Declaration of Helsinki and approval by hospital review board. Informed consent and permission to use clinical images and case details for publication/research

Case 1. A diabetic foot ulcer (right foot)

- A 66-year-old, Indian lady
- Comorbidities diabetes mellitus, hypertension and dyslipidemia
- Diabetic foot ulcer, of the right foot.

Day 0

Wound size: 39.1cm²
Pain score: 0



Day 138

Wound size: healed
Pain score: 0

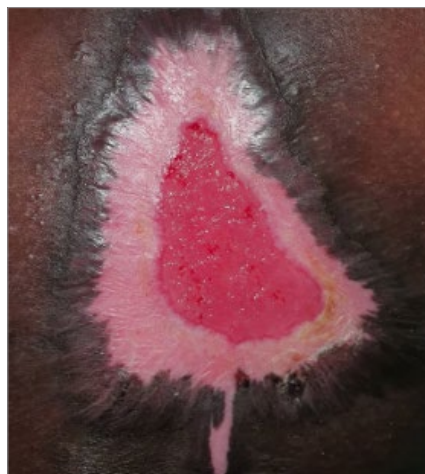


Case 2. Carbuncle (post incision and drainage)

- A 54-years old, Indian lady
- Underlying Colon Carcinoma
- Carbuncle (post-incision and drainage).

Day 1

Wound size: 24.0cm²
Pain score: 1



Day 37

Wound size: 3.9cm²
Pain score: 0



purposes were obtained before patients began the study.

Results

We recruited 10 patients into the study by convenience sampling. There was a noteworthy improvement in all ten cases in terms of wound healing as well as reduction in wound size. The percentage of wound reduction ranges from 83.8% to 100% ranges from 2 to 20 weeks (Table 1).

There is little to no change in the pain score experience by patients this was to be expected, as most of the patients has underlying diabetes.

Case 1

A 66-year-old, Indian lady with underlying diabetes mellitus, hypertension and dyslipidemia. The patient was on hydrofiber Ag dressing before initiation of Anscare Healus Wound Gel. She had a wound debridement procedure done for her right DFU. The wound size at the start was 39.1cm², the wound had completely healed by 138 days. She had no pain at the start of the study, which did not change throughout the study (Case 1).

Case 2

A 54-year-old Indian lady, with underlying colon carcinoma. She underwent incision and

drainage procedure for a carbuncle. She was initially on hyderfiber Ag and polyurethane foam before initiation of Anscare Healus Wound Gel. The initial wound size was 24.0cm² by day 37 the wound had reduced to 3.9cm². The patient reported a pain level of 1 and the start of treatment and 0 on day 37 (Case 2).

Case 3

A 52-year-old, Chinese gentleman, with underlying diabetes mellitus and hypertension. He was initially treated with a chlorhexidine dressing for his infected lumbo-sacral wound

(pressure ulcer) before being treated with initiation of Anscare Healus Wound Gel. The initial size of the wound was 162.75 cm² by day 85 the wound size was reduced to 33.0 cm². The pain level at the start of the study was 2 on the VAS score, by day 85 this was 1 (Case 3).

Case 4

A 50-year-old, Malay gentleman, with underlying diabetes mellitus. He had a right leg below the knee amputation due to diabetic foot ulcer. Patient was on daily normal saline dressing before beginning treatment with of Anscare

Case 3. An infected lumbo-sacral wound (pressure ulcer)

- A 52-year-old, Chinese gentleman
- Underlying diabetes mellitus and hypertension
- Infected lumbo-sacral wound (pressure ulcer).

Day 1

Wound size: 162.75cm²
Pain score: 2



Day 85

Wound size: 33.0cm²
Pain score: 1



Case 4. A diabetic foot ulcer, right, following a below knee amputation

- A 60-year-old, Malay gentleman
- Underlying diabetes mellitus
- Diabetic foot ulcer, right (post below knee amputation).

Day 1

Wounds size: 17.0cm²
Pain score: 0



Day 55

Wounds size: 0.2cm²
Pain score: 0



Case 5. Diabetic foot ulcer, rights

- 60 years old, Chinese gentleman
- Underlying Diabetes Mellitus
- Right diabetic foot ulcer (post 2nd, 3rd and 4th toes Ray's amputation).

Day 1

Wound size: 50.0cm²

Pain scale: 0



Day 107

Wound size: 1.4cm²

Pain scale: 0



Case 6. Cellulitis of the right foot

- A 60-year-old, Malay gentleman
- Underlying diabetes mellitus, hypertension, dyslipidemia
- Cellulitis of the right foot.

Day 1

Wound size: 5.9cm²

Pain scale: 0



Day 70

Wound healed

Pain scale: 0



Healus Wound Gel. The initial size of the wound was 17.0cm² by day 85 the wound size was reduced to 0.2cm². The wound was not associated with any pain, with the start and end VAS score 0 (Case 4).

Case 5

A 60-year-old, Chinese gentleman, with underlying diabetes mellitus. He had had 2nd, 3rd and 4th toes Ray's amputation and had a right diabetic foot ulcer. Initial treatment was a

Case 7. Post-surgical wound

- 21 years old, Malay lady
- Post-appendicectomy surgical wound.

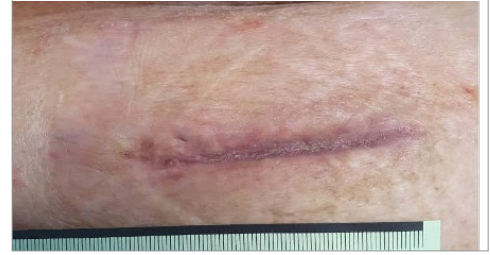
Day 1

Wounds size: 5.0cm²
Pain score: 0



Day 55

Wound healed
Pain score: 0



Case 8. Diabetic foot ulcer, right

- A 45-year-old, Indian lady
- Underlying Diabetes Mellitus
- Diabetic foot ulcer, right.

Day 1

Wound size: 12.5cm²
Pain scale: 0



Day 50

Wound size: 2.0cm²
Pain scale: 0



honey dressing before starting treatment with the Anscare Healus Wound Gel. The initial size of the wound was 17.0cm² by day 85 the wound size was reduced to 0.2cm². The wound was not associated with any pain, with the start and end VAS score 0 (Case 5).

Case 6

A 60-year-old, Malay gentleman, with underlying diabetes mellitus, hypertension and dyslipidemia. He had cellulitis of the right foot. The patient was initially on hydrofiber

Ag dressing before beginning treatment with Anscare Healus Wound Gel. The initial wound size was 5.9cm² by day 70 the wound had healed. There was no pain associated with the wound (Case 6).

Case 7

A 21-year-old, Malay lady, with no known medical illness. Patient had post-appendicectomy surgical wound and was on Jelonet dressing before starting treatment with Anscare Healus Wound Gel (Case 7). The wound

Case 9. Right foot abscess

- 64 years old, Malay lady
- Underlying diabetes mellitus and hypertension
- Right foot abscess (post incision and drainage).

Day 1

Wound size: 4.8cm²

Pain scale: 0



Day 28

Wound size: 0.6cm²

Pain scale: 0



Case 10. Left knee abscess

- A 62 years old, Malay gentleman
- Underlying diabetes mellitus
- Left knee abscess.

Day 1

Wound size: 25.8 cm²

Pain scale: 2



Day 45

Wound size: 2.0 cm²

Pain scale: 0



was 5.0cm² at the start of treatment and had healed by day 55. The pain score was 0 at the start and end of treatment.

Case 8

A 45-year-old, Indian lady, with underlying diabetes mellitus. The patient had a diabetic foot ulcer on the right. She was initially treated with superoxidised solution dressing before beginning treatment with of Anscare Healus Wound Gel. The initial size of the wound was

4.8cm² by day 28 the wound size was reduced to 0.6cm² (Case 8). The wound was not associated with any pain, with the start and end VAS score 0.

Case 9

A 64-year-old, Malay lady, with underlying diabetes mellitus and hypertension. The patient had incision and drainage procedure done for her right foot abscess and was on liquid paraffin and Jelonet dressing before starting treatment

with Anscare Healus Wound Gel. The initial size of the wound was 4.8cm² by day 28 the wound size was reduced to 0.6cm². The wound was not associated with any pain, with the start and end VAS score 0 (Case 9).

Case 10

A 62-year-old, Malay gentleman, with underlying diabetes mellitus. The patient had left knee abscess and was treated with a honey dressing before starting treatment with of Anscare Healus Wound Gel. The initial size of the wound was 4.8cm² by day 45 the wound size was reduced to 2.0cm². The VAS pain score was 2 at the start of treatment and 0 by day 45 (Case 10).

Discussion

Anscare Healus Wound Gel used in this study, provides a moisture-balanced environment for wound healing while promoting autolytic debridement by using the body's production of enzymes and moisture. It contains carboxymethylcellulose sodium, alginate, glycerol, lactate, and purified water. The wound gel can soften eschar and remove necrotic tissue, promoting autolytic debridement with superior exudate absorption. Carboxymethylcellulose sodium has antimicrobial action (Wong and Ramli, 2014), antibiofilm action (Ali et al, 2019) and promotes wound healing by restoring the normal structural and functional characteristics of the skin (Basu et al, 2018). Alginate dressings absorb fluid from the wound and help to maintain a physiologically moist environment that minimises bacterial infections at the wound site (Sudarsan et al, 2015). Gels with alginate in combination with pure water can more effectively replace exudate in order to avoid maceration of the wound bed.

Modern autolytic debridement, such as Healus Wound Gel, has many advantages over mechanical debridement. Conventional methods where a dressing is applied directly after mechanical debridement cause the top layer of the wound adhere to the dressing when the wound bed dries, hence, the top layer of the skin would be pulled off during dressing change causing patient distress. This wound gel provides a moisture-balanced environment for the wound bed, keeping the wound bed moist for better wound healing and pain-free experience.

A balanced moist wound environment is critical to promote cellular growth and the establishment of a provisional wound matrix. Too much moisture can cause skin breakdown, while too little moisture can impair cellular activities and cause desiccation. Healus Wound

Gel has dual action in maintaining moisture-balanced environment. It has the ability to absorb excessive exudate as well as donate moisture to a dry environment.

This Gel has a bigger advantage over dressings as it is able to complement wound area of various shape and size. A limitation of this study was the small number of patients and might not represent the population at large. A much larger study would be needed to show the significance of this finding

Declaration of interest

BenQ Materials Corporation sponsored the Anscare Healus Wound Gel used for this study. The author had no conflicts of interest to declare.

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