

The effectiveness of Wondaleaf flat dressing and adhesive pouch dressing as a secondary dressing



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Aim: To investigate the effectiveness of Wondaleaf dressing on healing speed and reduction of wound size. **Methods:** The clinical benefits of using Wondaleaf flat dressing and Wondaleaf Adhesive Pouch Dressing (WLAP) in the management of patients with a variety of wounds. Patients with venous leg ulcers, carbuncles, chronic ulcer following a trauma injury, abscess, pressure ulcers and surgical site infections were evaluated in this study. The study was a prospective, randomised, single centre study at Wound Care Unit, Department of Internal Medicine, Hospital Kuala Lumpur, where wounds were managed with Wondaleaf flat dressings and WLAP dressings during the period between November 2020 to November 2021.

Result: We recruited 28 patients to the study. This study showed that WLAP was effective as secondary dressing. In all but one case the wounds had reduction in surface area. There were 5 cases where the wounds were completely closed and healed between 5 and 11 weeks. Another 8 cases the wounds achieved more than 80% area reduction in between 3 and 11 weeks. **Conclusion:** Based on the outcomes for these 28 patients it seems that the WLAP was successful in providing a barrier to bacterial contamination and infection. Other than that, this study showed that the pouch pattern of Wondaleaf dressing is effective at joint areas, limbs and any parts of the body to be use as a secondary dressing. Further studies are required to confirm these findings.

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Film dressings also known as “see-through” dressings can be used as primary or secondary dressings (Baranoski and Ayello, 2019). They may also be used in conjunction with other dressings such as foams, hydrogel sheets, ionic silver and composite dressings. (Nair, 2019) Films are used as protective covers over catheter sites, in theatre as drapes and have a long history of safe usage.

Wounds, as such pressure ulcers (PU), diabetic foot ulcers (DFU) and venous leg ulcers (VLU), are a global healthcare concern, requiring an interdisciplinary approach to care and management. All healthcare professionals need to be responsible for the prevention and

treatment of wounds both acute and chronic. If not cared for appropriately wounds may have a negative impact on the patient’s quality of life because of an increase in symptoms such as pain, exudate and malodour (Nair, 2021).

Wondaleaf flat dressing is a film dressing that provides protection for superficial or closed wounds and can also be used as an all-purpose mechanical barrier. It is waterproof and has a high moisture vapour permeability to help prevent the accumulation of fluid under the dressing. The film is conformable and extensible to increase user comfort. The Wondaleaf flat dressing provides protection for superficial or closed wounds and can also be used as an all-

purpose mechanical barrier. Most importantly, it is extremely thin to prevent the edges from rolling up. Its matt surface makes it almost invisible once applied.

Wondaleaf Adhesive Pouch Dressing on the other hand has a non-adhesive pouch at the centre of the flat dressing mentioned above (Figure 1). The three-dimension configuration allows pressure-less coverage of wound especially on contoured skin surfaces and protrusions.

Methodology

Patients with a variety of wounds were treated at the Wound Care Unit, Department of Internal Medicine, Hospital Kuala Lumpur, using Wondaleaf dressings. The treatment methods are as follows (Schmitz and Kasparek, 2020; Nair et al, 2021):

- The wound was cleaned with distilled water for irrigation, where required debridement was performed accordingly with TIME tool assessment.

Table 1. Patient characteristics and wound location [4]

Case number	Age (years)	Sex	Wound location
Venous ulcer			
1.	56	Male	Medial tibiafibula aspect of right leg
2.	82	Female	Medial submaleolar of left leg
3.	28	Female	Lateral of right leg
4.	67	Male	Medial malleolar of left leg
5.	64	Male	Lateral malleolar of left leg
6.	42	Female	Medial tibiafibula of bilateral leg
7.	63	Female	Lateral malleolar of left leg
8.	50	Male	Lateral malleolar of left leg
9.	62	Male	Medial tibifibula aspect of right leg
10.	64	Female	Anteromedial tibiafibula aspect of right leg
Carbuncle			
1.	36	Female	Upper back
2.	37	Female	Left gluteal
3.	52	Male	Anteromedial tibiafibula aspect of right leg
Chronic ulcer wound due to trauma injury			
1.	40	Male	Upper medial tibiafibula aspect of left leg
2.	34	Male	Medial tibiafibula aspect of left leg
3.	46	Male	Medioposterial tibiafibula aspect of left leg
4.	54	Female	Proximal anterior tibifibula aspect of left leg
5.	44	Female	Lateral tibiafibula aspect of left leg
6.	21	Male	Lateral tibiafibula aspect of left leg
Abscess			
1.	34	Female	Anterior Tibiafibula aspect of right leg
2.	18	Male	Proximal lateral Tibiafibula aspect of right leg.
3.	38	Male	Right neck
Pressure ulcer			
1.	43	Female	Sacral region
2.	54	Female	Trochanteric of left leg
3.	58	Male	Trochanteric of right leg
Chronic wound due to surgical site infection			
1.	47	Female	Medial aspect of left arm
2.	55	Male	Proximal lateral tibiafibula aspect of left leg
3.	59	Female	Proximal anteromedial tibiafibula aspect of right leg

Table 2. Wound size pre- and post-treatment, duration of therapy and percentage wound area reduction

Case number	Pre-treatment wound size (cm)	Post-treatment wound size (cm)	Duration of wound therapy (days)	Duration of therapy (weeks)	Wound area reduction (%)
Venous Ulcer					
1.	11cm x 8cm	10cm x 7cm	92	13	20
2.	2.5cm x 2cm	1.5cm x 1.3cm	47	7	61
3.	1cm x 4cm	0.5cm x 1.5cm	65	9	81
4.	4cm x 5.5cm	4cm x 4.8cm	18	3	13
5.	4cm x 8cm	3.5cm x 8cm	78	11	13
6.	3cm x 3cm	3cm x 2.8cm	22	3	7
7.	3cm x 5cm	1.5mc x 4cm	32	5	60
8.	5.5cm x 6cm	3cm x 4.5cm	53	8	59
9.	4.5cm x 3.5cm	0cm x 0cm	77	11	100
10.	4cm x 2.5cm	2.8cm x 1.5cm	86	12	58
Curbuncle (Post Saucerization)					
1.	13cm x 8.5cm	0cm x 0cm	49	7	100
2.	4.5cm x 7cm	0cm x 0cm	36	5	100
3.	7cm x 6.5cm	3cm x 2cm	80	11	87
Chronic ulcer wound due to trauma injury.					
1.	2.5cm x 3cm	2cmx0.5cm	22	3	87
2.	9cm x 2cm	9cmx2.5cm	18	3	Increasing in size. (20%) due to infection and stagnant wound.
3.	1cm x 4cm	0.5cmx1.5cm	65	9	81
4.	7cm x 2cm	6cmx1.5cm	65	9	36
5.	8cm x 3cm	1cmx0.5cm	26	4	98
6.	9cm x 3.5cm	1.5cmx1cm	77	11	95
Abscess (post incision and drainage)					
1.	3cmx3cmx2cm	1.5cmx1cm	14	2	92
2.	2cmx0.5cm	0cmx0cm	33	5	100
3.	3.5cmx3.5cm	3.2cmx3.2cm	10	1	16
Pressure injury					
1.	5cmx3cmx2cm	1cmx0.8cmx1cm	50	7	97
2.	5cmx5cmx2cm	4.5cmx4.8cmx2cm	22	3	14
3.	3cmx2cm	1.5cmx1.5cm	81	12	63
Chronic ulcer					
1.	9cm x 3cm	7.5cmx2.5cm	20	3	31
2.	5cm x 2.5cm	0cmx0cm	43	6	100
3.	4cm x 2.5cm x 2cm	4cmx2cmx1cm	61	8	60

■ The wound was covered with the Wondaleaf dressing as a primary or secondary dressing.

Inclusion criteria

Patients who presented to the Wound Care Unit, Department of Internal Medicine, Hospital Kuala Lumpur in the study period, with clean wound or undergoing clean-contaminated surgeries

Exclusion criteria

Exclusion critrea included patients with uncontrolled diabetes; immuno-compromised patients, any patient with a history of impaired healing; patients on medication that may impede wound healing or render them susceptible to infection (eg: steroid); patient with contaminated or infected surgery; those lost to follow-up.

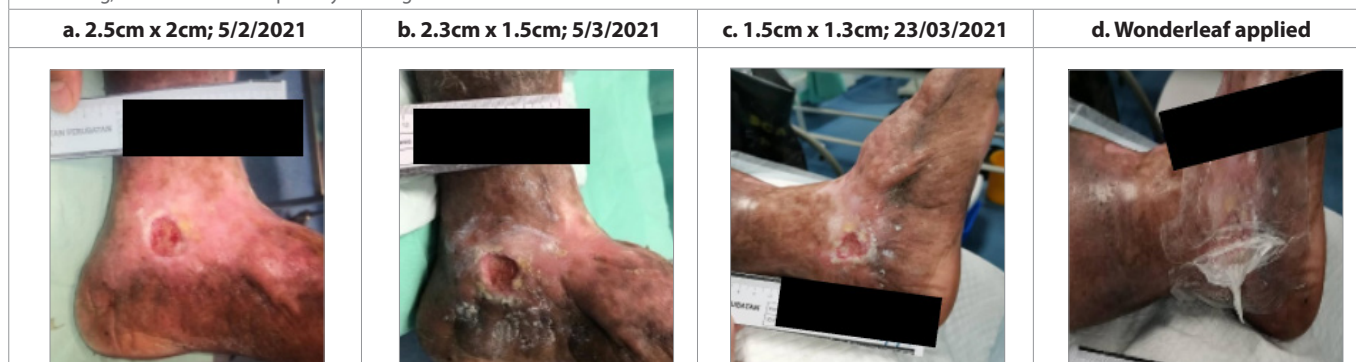
Case 1. A Venous leg ulcer

■ A 56-year-old, Malay Male, with no known medical illness presented with a right leg venous ulcer 11 x 8 cm (Figure 1a), in November 2020. After two days the wound bed appeared cleaner and there was a small reduction in size to 10.5 x 7.5cm (Figure 1b). After 1 month there was evidence of epithelial regrowth and the wound had reduced to 10 x 7cm (Figure 1c). In this case the Wondaleaf was used as a secondary dressing with a barrier cream (calmoseptine) around the wound and highly absorbent antimicrobial foam with methylene blue, gentian violet and silver (Retro-Tech Dressing) (Figure 1d).



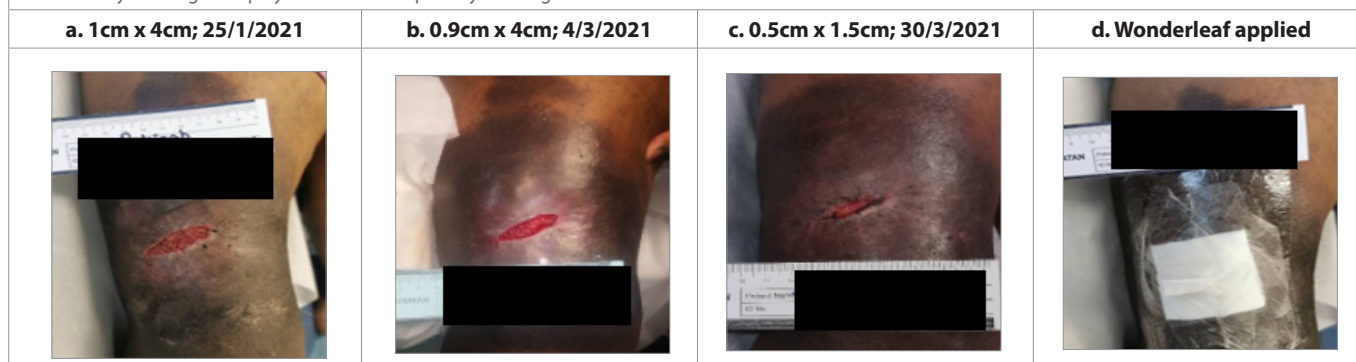
Case 2. A Venous leg ulcer

■ An 82-year-old, Malay female, with diabetes mellitus and hypertension presented in February 2021 with a chronic venous ulcer over left leg of 2.5cm x 2.0cm (Figure 2a). The wound had been present for 1 year. One month later the wound bed appeared reduced in size to 2.3 x 1.5cm (Figure 2b). After a further 18 days there was evidence of good epithelial regrowth and the wound had reduced in size to 1.5 x 1.3cm (Figure 2c). In this case the Wondaleaf was used as a secondary dressing, kadermin creme as primary dressing



Case 3. A venous leg ulcer

■ A 28-year-old Malay female, no known medical illness presented in January 2021 with a right leg venous ulcer, wound size 1cm x 4cm (Figure 3a). The wound was present for a month before treatment. After 6 weeks we observed good granulation and there was a small reduction in size to 0.9cm x 4.0cm (Figure 3b). After a further 3 weeks there was evidence of contraction wound and the wound had reduced again to 0.5cm x 1.5cm (Figure 3c). In this case the Wondaleaf was used as a secondary dressing and Spray 8 was used as a primary dressing.



Results

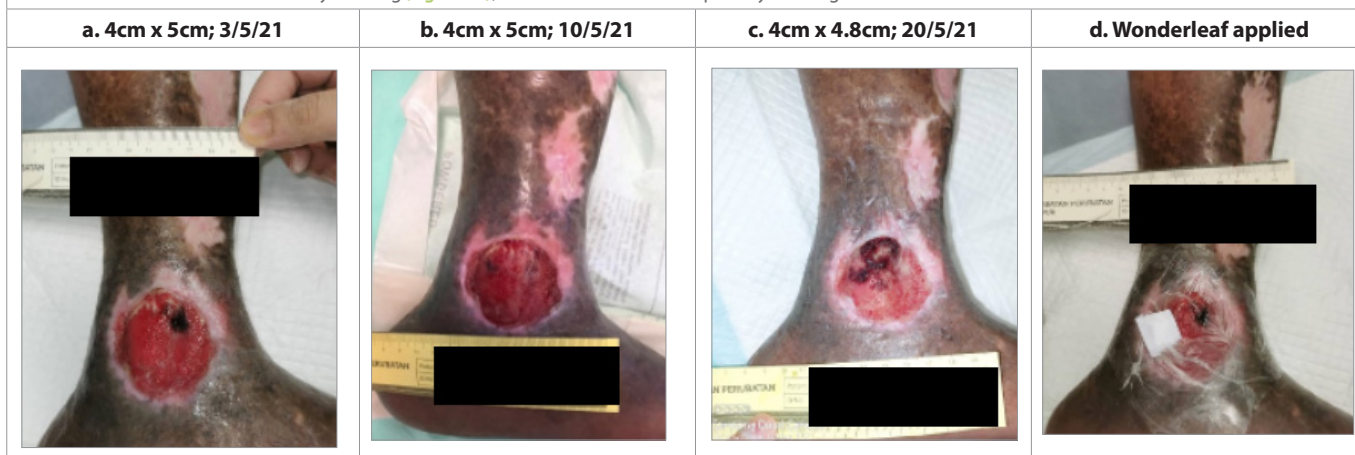
The age of the patients included in ranged from 18–82 years old. In this study there are 14 males and 14 female patients. A total of 28 patients took part in this study, patient characteristics and location of wound are shown in [Table 1](#).

The cases are divided to 6 types of wounds:

- VLU
- Carbuncle (post saucerization)
- Chronic ulcer wound due to trauma injury
- Abscess (post incision and drainage)

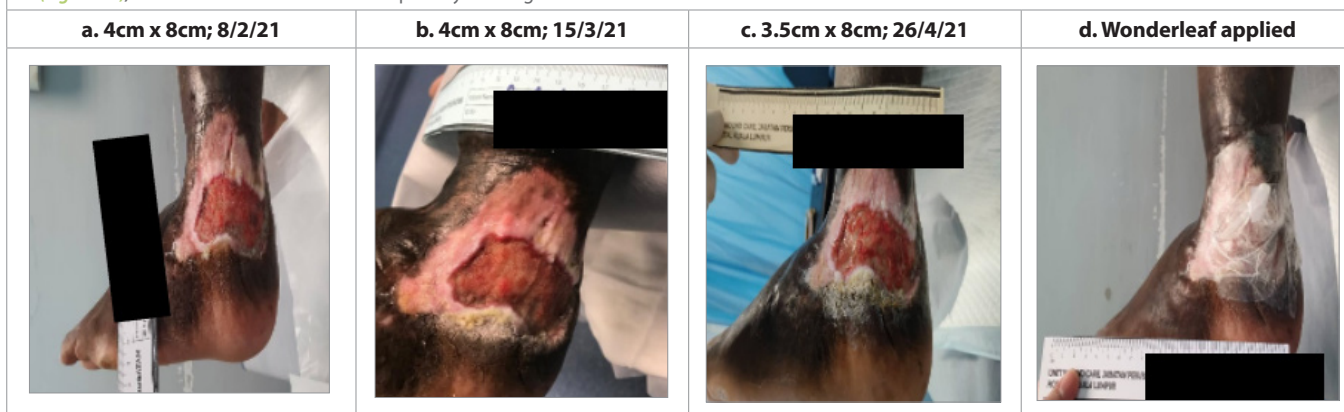
Case 4. A venous leg ulcer

■ A 67-year-old Chinese male, no known medical illness presented on the 3 May 2021 with a venous ulcer of left leg 4cm x 5.5cm (Figure 4a). The wound had been present for 1 month. After 6 weeks the wound bed appeared good in granulation and there was a small reduction in size to 4.0 cm x 5.0cm (Figure 4b). After a further 10 days there was evidence of contraction wound and the wound had reduced again to 4.0 cm x 4.8 cm (Figure 4c). Wondaleaf was used as a secondary dressing (Figure 4d), kadermin cream was the primary dressing.



Case 5 . A venous leg ulcer

■ A 64-year-old Malay male, with diabetes mellitus and hypertension, presented in February 2021 with a left leg venous ulcer; wound size 4cm x 8cm, the wound had been present for 3 month. (Figure 5a). After 5 weeks the wound bed was the same size 4cm x 8cm (Figure 5b). After a further 6 weeks there was evidence of granulation on wound bed and the wound had reduced to 3.5cm x 8cm (Figure 5c). In this case the Wondaleaf was used as a secondary dressing (Figure 5d), kadermin creme was used as the primary dressing.



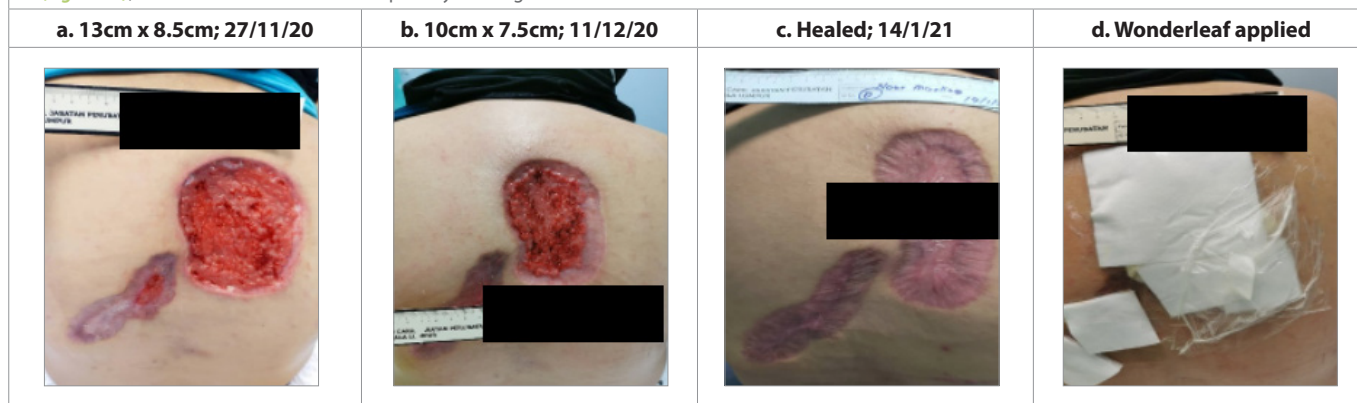
Case 6. Venous leg ulcer

■ A 42-year-old female, with no known medical illness, presented in February 2021 with a bilateral venous ulcer of lower limbs, wound 3cm x 3cm (Figure 6a). The wound has been present for 2 weeks. After 3 days of treatment the wound bed appeared to have good granulation but was still the same in size, 3cm x 3cm (Figure 6b). After a further 18 days later there was evidence of contraction wound and the wound had reduced again to 3cm x 2.8 cm (Figure 6c). In this case the Wondaleaf was used as a secondary dressing (Figure 6d), biofill (collagen) was used as the primary dressing.



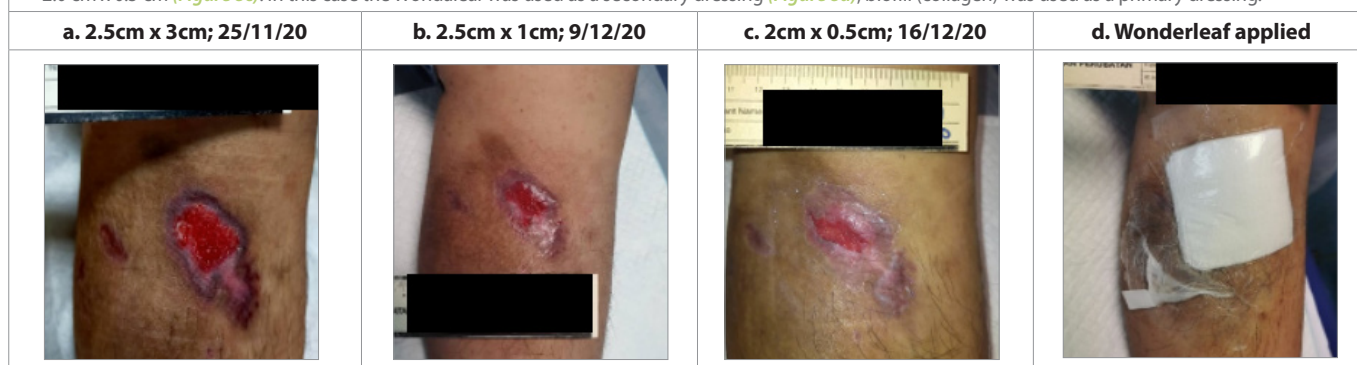
Case 7. Curbuncle

■ A 36-year-old female with diabetes mellitus, hypertension, chronic kidney disease, presented in November 2020 with a curbuncle on the upper back; size 13cm x 8.5cm (Figure 7a). The wound had been present for 2 weeks. After 3 weeks the wound bed appeared to have good granulation and there was a small reduction in size to 10.0 cm x 7.5 cm (Figure 7b). One month later the wound healed completely (Figure 7c). In this case the Wondaleaf was used as a secondary dressing (Figure 7d), wound kreme was used as the primary dressing.



Case 8. Chronic wound following trauma

■ A 40-year old male with diabetes mellitus and bronchial asthma, presented in November 2020 with a ulcer on left leg medial aspect; wound size 2.5cm x 3.0cm (Figure 8a). The wound had been present for 2 weeks. After 2 weeks of treatment the wound bed appeared to have good granulation tissue and there was a small reduction in size to 2.5 cm x 1.0 cm (Figure 8b). After a further week there was evidence of good epithelial regrowth and the wound had reduced in size to 2.0 cm x 0.5 cm (Figure 8c). In this case the Wondaleaf was used as a secondary dressing (Figure 8d), biofill (collagen) was used as a primary dressing.



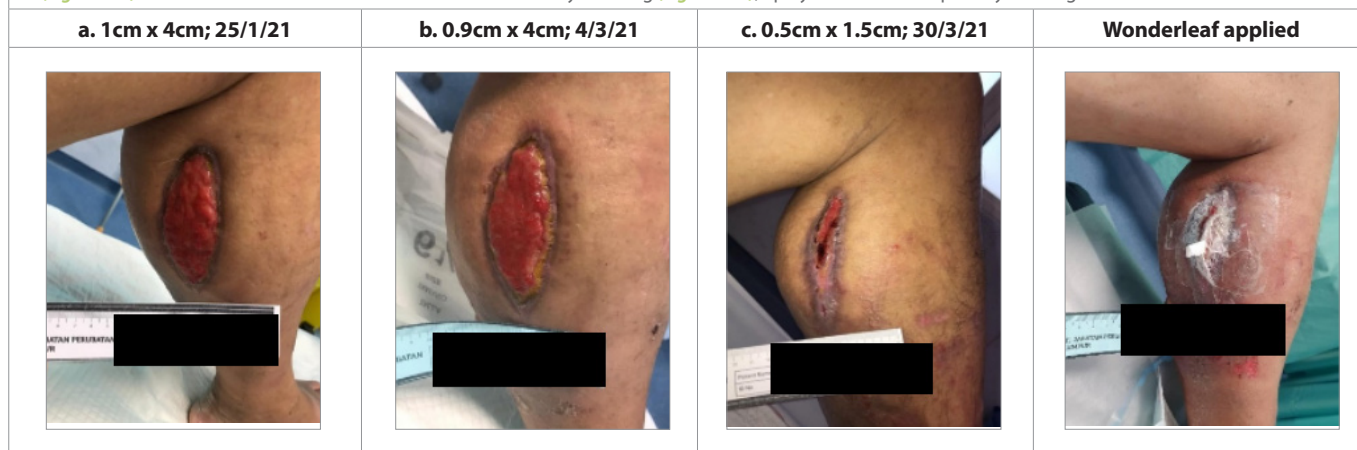
Case 9. A chronic wound following trauma

■ A 34-year-old male, with no known medical illness, presented with a left foot wound complicated with compartment syndrome. A motor vehicle accident in 2014 led to a non-healing wound. When the patient presented to our clinic in January 2021 the wound was 9cm x 2cm (Figure 9a). After 5 days the wound bed appeared to have good granulation and there was a small reduction in size to 8cm x 3cm (Figure 9b). After a further 11 days there was evidence of infection in the wound bed, which appeared to cause an increase in size to 9.0 cm x 2.5 cm (Figure 9c). In this case the Wondaleaf was used as a secondary dressing (Figure 9d), wound kreme was used as a primary dressing.



Case 10. A chronic wound following trauma

■ A 46-year-old male Male with diabetes mellitus, hypertension, hyperlipidaemia, presented in January 2021 with a ulcer on left leg; wound size 1cm x 4cm, the wound was present in 1 month (Figure 10a). After 2 weeks the wound bed appeared to have good granulation and there was a small reduction in size to 0.9 cm x 4cm (Figure 10b) A further 26 days later there was evidence of good epithelial regrowth and the wound had reduced again to 0.5cm x 1.5 cm (Figure 10c). In this case the Wondaleaf was used as a secondary dressing (Figure 10d), Spray 8 was used as a primary dressing.



■ PU

■ Chronic wounds due to surgical site infection

Of the wounds 96% had an increase in percentage of wound area reduction, one case had an increase in size (Table 2). Details of all the cases can be found in (Table 2) we also present a selection of patients in Cases 1–10.

Discussion

This study showed that the Wondaleaf dressing was effective in aiding wound healing. In addition Wondaleaf performed a role as barrier to contamination and also importantly maintained healthy surrounding tissues. Multiple factors may affect the healing rate, such as the patient's compliance to treatment and follow up, diabetes control, nutritional status and extreme age.

From the work presented here it is evident that each patient had a different healing time. But all the wounds are improving healing except one case where the patient had a chronic wound caused by trauma.

Here, the Wondaleaf dressing was shown to be effective as a secondary dressing of multiple variety type of wound cases including VLU, carbuncles, and chronic wounds due to trauma injury, as well as pressure ulcers and surgical site infection.

In this study the carbuncle was the wound type to have the highest percentage reduction in wound area, between 87% and 100% (completely wound closure).

Conclusion

The Wondaleaf dressings provided an effective method of creating and keeping a moist wound environment and aiding wound healing. The fact that they are transparent, waterproof and flexible means that they will be a product used in the treatment of simple wounds and as an essential component of other dressings (Thomas et al, 1997; Himel et al, 1998; Fletcher 2003).

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