

Effectiveness of combination of silver gelling fibre with foam dressing in diabetic foot ulcer: a case series

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Key words

- Diabetes foot ulcer infection
- Silver gelling fibre
- Foam dressing
- Case series

Article points

1. Case series to demonstrate the effectiveness of silver gelling fibres in combination with foam dressing
2. Good healing rates were found with use of this combination
3. Infection prevention combined with exudate management were key benefits to this treatment regimen.

Authors

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This case series demonstrates the effectiveness of using silver gelling fibres in combination with a foam dressing for the treatment of diabetic foot ulcers.

Diabetic foot ulceration is one of the most devastating complications that can occur in adults with diabetes. The worldwide annual incidence of diabetic foot ulcers (DFUs) is between 9.1 to 26.1 million, and it affects 15% of all diabetic patients (Oliver et al, 2023; Akkus and Sert, 2022). Patients with DFUs are 2.5 times more likely to develop a 5-year risk of mortality compared to those without (Akkus and Sert, 2022). Factors contributing to diabetic foot ulceration include poor glycaemic control, peripheral neuropathy, peripheral vascular disease, poor foot care and repetitive trauma to the stress area of the foot (Oliver et al, 2023). DFUs affect the patient's quality of life, with a decline in the functional status and increased risk of sepsis, potentially leading to limb amputation and death (McDermott et al, 2023). The use of a combination of silver gelling fibres with a foam dressing tremendously accelerates the healing of DFU wounds.

Objective

To assess the effectiveness of silver gelling fibres with foam dressing in DFU treatment.

Materials and methods

A total number of three patients attending the wound care clinic at Hospital Kuala Lumpur were selected for the study. All wounds were foot ulcers presenting on diabetic patients. No limits were put on age/gender, premorbid illness, condition duration or intensity. The patient's wounds were cleaned, the silver gelling fibre was applied, and the wounds were subsequently covered by the foam dressing. Patients were followed up and wound dressings were changed at least twice a week. Patient permission was obtained to use their details and clinical images prior to the study.

Discussion

From the study, we can see that two out of three patients achieved 50% wound healing, while one patient achieved 100% wound healing. Wound healing is the body's normal physiological response to tissue injury that involves cellular and humoral responses (Hegazi et al, 2024). Normal wound healing in diabetic patients is affected by factors such as impaired oxygenation, venous insufficiency, infections, immune dysfunction, dry environment and age-related changes (Hegazi et al, 2024). Particularly within developing countries, a greater emphasis has been placed on the selection of suitable dressings to manage these complications associated with the diabetic foot.

The use of an ideal dressing will inhibit the propagation of microbes and eventually accelerate wound healing processes (Huang et al, 2021). Silver dressings are bactericidal and fungicidal and, most importantly, have action against the common pathogens found within chronic wounds such as *S.aureus* and *Pseudomonas spp* (Leaper, 2006). Silver ions within the dressing act by merging with the negative charges on the surface of bacterial proteins. This interferes with microbial proliferation, leading to fatal structural changes of the bacterial cell walls and membranes through the alteration of the RNA and DNA (Huang et al, 2021; Lo et al, 2008).

An equally important consideration in DFU dressing selection is the management of wound exudate. Heavily exuding wounds are at greater risk of periwound maceration and excoriation to surrounding skin, resulting in delayed wound healing (McIntosh et al, 2019). These wounds also cause discomfort, produce malodour and negatively affect the patient's quality of life due to leakage (McIntosh et al, 2019). Foam dressings are used in medium to heavily exuding wounds and will

Results

Case 1: A 58-year-old gentleman with underlying Type 2 diabetes mellitus, hypertension, dyslipidemia and a history of ray's amputation of the left fourth and fifth toes, presented with a chronic non-healing wound over the left heel since May 2023.

Treatment: Foam dressing with silver gelling fibre



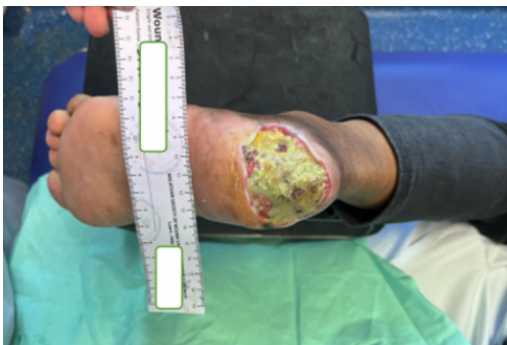
27th July 2023
10.5cm x 5cm



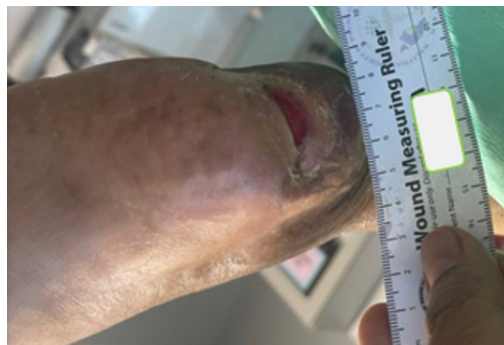
25th March 2024
4.5cm x 3cm

Case 2: A 49-year-old lady with underlying type 2 diabetes mellitus, hypertension, dyslipidemia and a history of wound debridement for left heel diabetic foot ulcer in July 2023.

Treatment: Foam dressing with silver gelling fibre.



28th July 2023
7cm x 5cm



9th October 2023
1cm x 2.5cm

Case 3: A 56-year-old gentleman, with underlying type 2 diabetes mellitus and history of right big toe necrotising fasciitis and had previously undergone wound debridement and ray's amputation of right big toe in May 2023.

Treatment: Foam dressing with silver gelling fibre.



31st July 2023
10cm x 9cm



20th March 2024
Healed

absorb exudate while adhering to the surrounding skin to keep the dressing in place (Nielsen and Fogh, 2015).

Limitations

The main limitations of the study were the variability of the healing factors in the diabetic foot patients. These include the age factor, severity of patient's peripheral vascular disease, the diabetic control of the HbA_{1c} level, presence of infection, compliance to dressing, site and the depth of wound, all of which play a pivotal role in wound healing.

Conclusion

This case series demonstrated the clinical efficacy of silver gelling fibre with foam dressing in enhancing DFU healing. ■

Declaration of interest

The author has no conflict of interest to declare.

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