

To demonstrate the antimicrobial efficacy of Biatain® Silicone Ag in the treatment of chronic burn wounds

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Introduction

Tissue invasion by organisms is a possibility depending on various factors and burn wounds are more susceptible. Consequently, the risk of infection is doubled depending on the Total Body Surface Area (TBSA) and extent of burn injury¹. Other factors that can contribute to skin damage in a burn include age and general health of the patient, tissue perfusion, pain, odour; high exudates accompanied by frequent dressing changes and increased moisture, thereby leading to maceration. This can increase risk of infection and cause further delay in wound healing, impacting patient's quality of life^{2,3}. The concept of burn wound chronicity is poorly understood, but burns do develop into chronic wounds and need to be treated as such rather than continuing to treat as acute wounds⁴.

Biatain Silicone Ag has been described as soft and conformable polyurethane foam dressing with a 3DFit Technology® that helps fill the gap between the wound bed and the dressing. This prevents accumulation of exudates, thus preventing maceration and provides a favourable environment, promoting optimal healing conditions. It contains dispersed ionic silver, which provides a sustained release during wear time and effectively fights against local infection.

The aim of this evaluation study was to determine the efficacy of the antimicrobial soft silicone foam dressing with silver in treating chronic burn wounds within the Chronic Burn Wound Pathway (CBWP). Reducing bacterial burden is key, so the use of an appropriate antimicrobial dressing is essential. The pathway has been demonstrated to be effective and this evaluation was to establish whether our current antimicrobial could be replaced with Biatain Silicone Ag.

Method

This evaluation included 7 patients with 9 burn wounds post debridement within the CBWP. The wounds included a range of depths and TBSA with different causes of burn injury. Following consent, wound swabs, digital images and overall dressing performance scores were recorded using a 10 point LIKERT scale. The parameters assessed included; pain on application, pain on removal, pain in-situ (0-low to minimal pain and 10-severe pain) and ease of application, conformability, ease of removal and control of exudate using scores (0-poor and 10-excellent).

	Range	Mean
Patient age (years)	17 – 82 years	54.5
TBSA (%)	0.2% -3.0%	1.4%
Male: Female ratio	2:5	

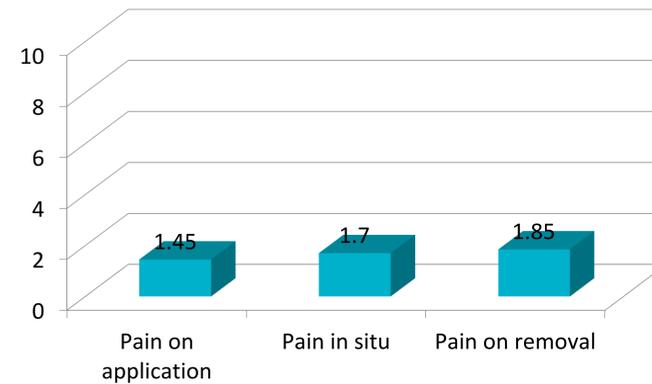
References:

1. Church, D., Elsayed, S., Reid, O., Winston, B., & Lindsay, R. (2006). Burn wound infections. *Clinical microbiology reviews*, 19(2), 403-434.
2. Swanson, T., Angel, D., Sussman, G., Cooper, R., Haesler, E., Ousey, K., Carville, K., Fletcher, J., Kalan, L., Keast, D., & Leaper, D. J. (2016). Wound infection in clinical practice: principles of best practice. 3. Bjarnsholt, T., Kirketerp-Møller, K., Jensen, P. Ø., Madsen, K. G., Phipps, R., Krogfelt, K., Høiby, N., & Givskov, M. (2008). Why chronic wounds will not heal: a novel hypothesis. *Wound repair and regeneration*, 16(1), 2-10.
4. Edwards J., (2013) Burn Wound Chronicity – Myth or Reality? *Wounds UK*, 9(3), 4-5.

Results

Biatain Silicone Ag appears to exhibit good antimicrobial action with no increase in wound size and helped to progress wounds onto the pathway. Overall, the wounds did not show signs of wound bed trauma or peri-wound damage. Patients and carers stated it was easy to apply, comfortable to wear and less bulky, with minimal pain at dressing changes. Nursing staff also stated acceptability of the dressing, where most staff were happy with the ease of application and time taken to dress the wound. Staff however, indicated some problems with dressing leakage due to the location of the wound and limited dressing size and conformability to the body. This was partly due to a misunderstanding of the exudate management potential of the dressing. In some instances based on the clinical status of the wound and swab results, the burn wound was treated for longer in order to achieve topical antimicrobial efficacy.

Mean Pain Scores



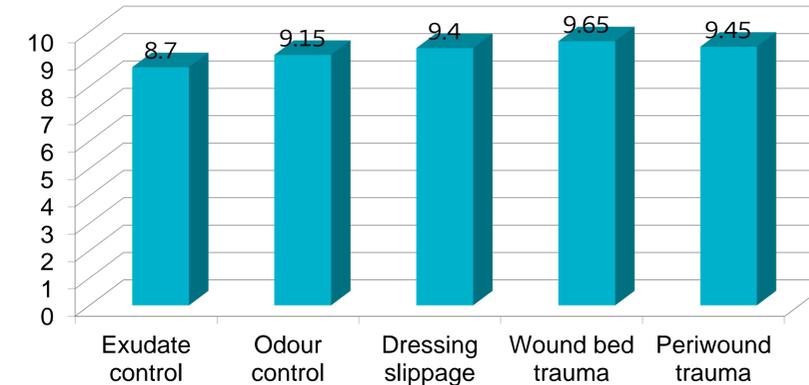
Discussion

As this product provided sustained release of silver in response to the level of exudate, it was observed to help promote granulation and to prevent further infection. Overall, good performance characteristics like ease and conformability promoting patient independence was noted. Its adhesive nature helped to promote shared care with patients undertaking their own dressing changes. The minimal pain at dressing changes and general patient compliance may have been contributing factors to wound healing. Staff indicated some problems with dressing leakage due to location of the wound, incorrect selection of product in more heavily exuding wounds, and due to limited dressing size and conformability, and used tape to secure it further.

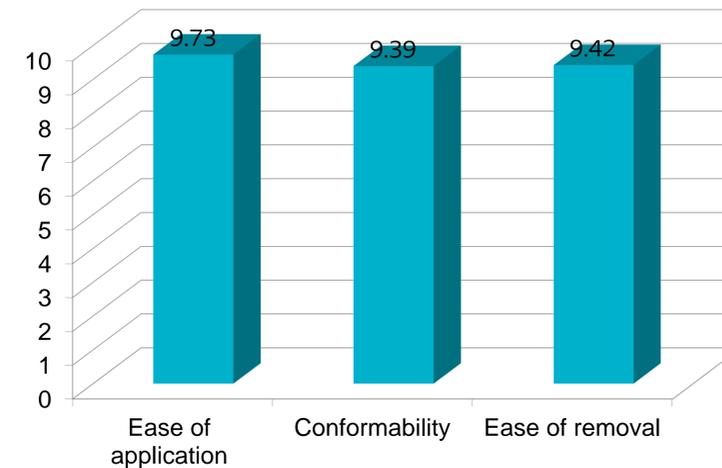
Conclusion

Chronic colonisation and infection determines whether the burn progresses to heal or becomes deep, therefore appropriate choice of antimicrobial dressing is important. This evaluation has revealed that the dressing appeared to promote good healing progression with no wound infection observed. Although this evaluation size is small, it has highlighted that Biatain Silicone Ag may offer us, an adjunct to our current antimicrobial dressings within the pathway, but patient selection is important due to the issues highlighted.

Mean Dressing Performance Scores



Ease and Conformability Scores



Case Study

A 17 year old who has been under the Burns Outreach Service since January 2018 with burns after an episode of self harm. She was absent from the service for 8 months and was re-referred with a chronic wound in June 2019. She was commenced on the Chronic Burn Wound Pathway to facilitate healing.



Patient referred



Wound healing trajectory using Biatain Silicone Ag continued with no signs of infection



Last wound image prior to COVID-19 pandemic