

Bioactive Microfibre Gelling (BMG™) technology in the management of lower limb ulcers : A Portuguese perspective

Vitor Santos, RN, CNS, MSc, Centro Hospital do Oeste (West Region Hospital Centre) Rua Diário de Notícias, Caldas da Rainha, Portugal | vitorsantos.speregrino@gmail.com

Ana Sofia Santos, RN Head of diabetes and diabetic foot Nursing department (West Region Hospital Centre) Peniche Department Rua General Humberto Delgado, Peniche, Portugal | sofiasantos.speregrino@gmail.com

Introduction

Management of patients with lower limb ulceration is sub-optimal, with unwanted variations increasing cost and lengthening healing times. In the UK alone the mean cost per VLU is currently estimated at £7,600 a year, with the cost of managing an unhealed VLU 4.5 times higher than managing a healed VLU (£3,000 per healed VLU and £13,500 per unhealed VLU) (Guest et al, 2017).

The term complexity used to describe a wound is not the same as chronicity or a hard-to-heal wound. A chronic or hard-to-heal wound is defined as a wound that has not healed in 12 weeks, or if the wound has not improved or not reduced in area by 40% in 4 weeks of standard care following the leg ulcer treatment pathway (Wounds UK, 2016).

Wound complexity increases the likelihood of wound chronicity and can make a wound hard-to-heal. When considering wound complexity, it may be useful to determine the factors contributing to wound complexity and if the wound is hard-to-assess, hard-to-manage, hard-to-heal.

Recognising, understanding and addressing the factors that contribute to wound complexity will help direct treatment and management and impact on healing progression.

We wanted to evaluate the impact a unique Bioactive Microfibre Gelling (BMG) technology dressing, MaxioCel®, utilizing 100% grade A chitosan could have on such complex, chronic and often very hard to heal wounds. BMG technology maintains a cohesive structure that increases fluid handling, it has an antimicrobial and anti-biofilm action alongside wound healing properties.

Method

A five patient case study series across four weeks, age range being 43-87 years with a wound duration between 2-8 months, to assess the effectiveness of MaxioCel in the management of venous, arterial and mixed lower limb ulceration in an evaluation of practice in Portugal.

We particularly wanted to assess the dressings ability to reduce wound chronicity and manage exudate levels so healing could proceed.

We recorded wound changes weekly including a subjective assessment observation of wound bed and periwound condition, wound area reduction, exudate management and any wound pain.

Data was also collected from clinicians and patients to provide information on clinical performance of the dressing E.g. ease of application and removal.

An evaluation form was completed at entry into the study and then weekly for four weeks of treatment or until healed.

Results

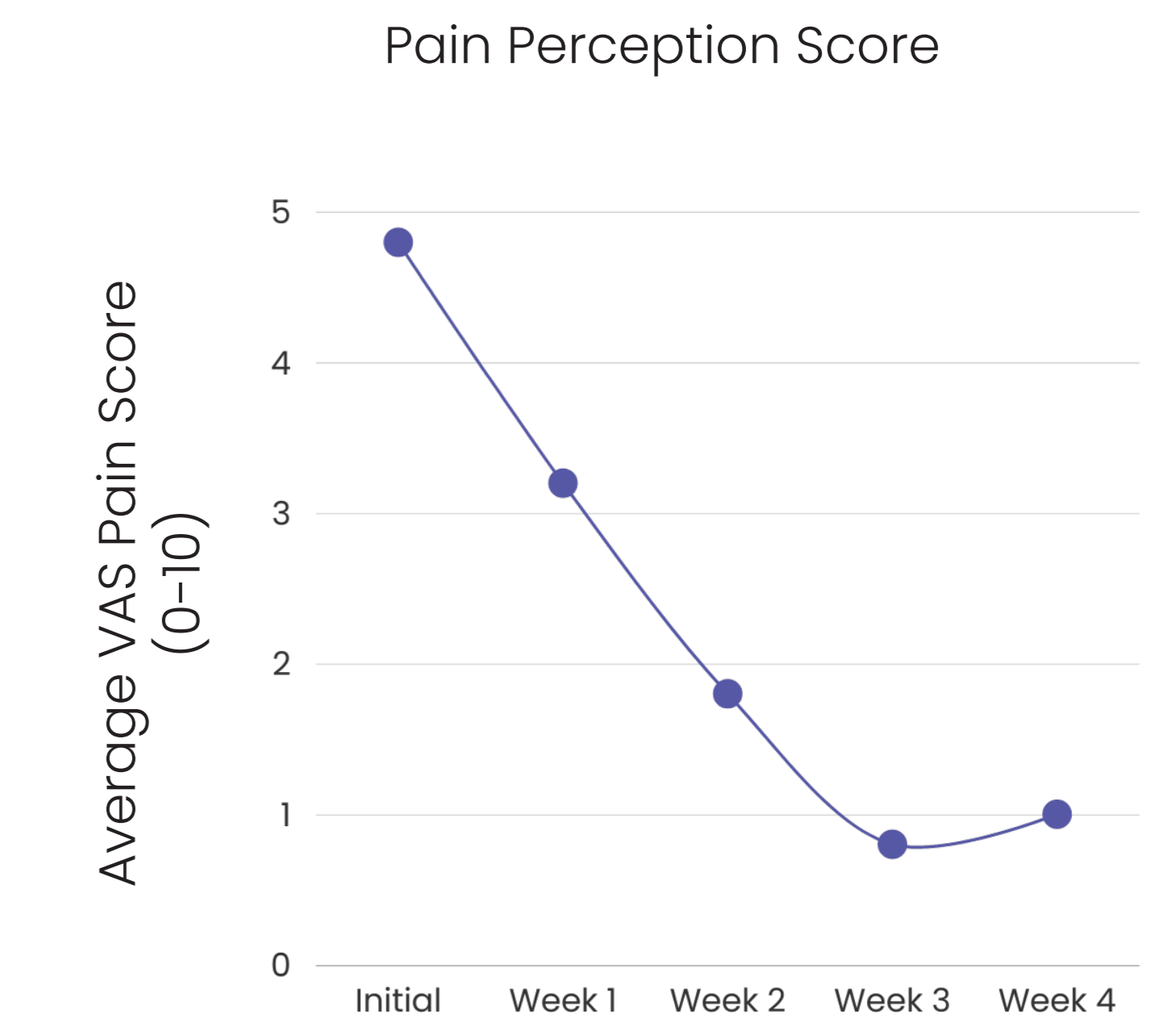
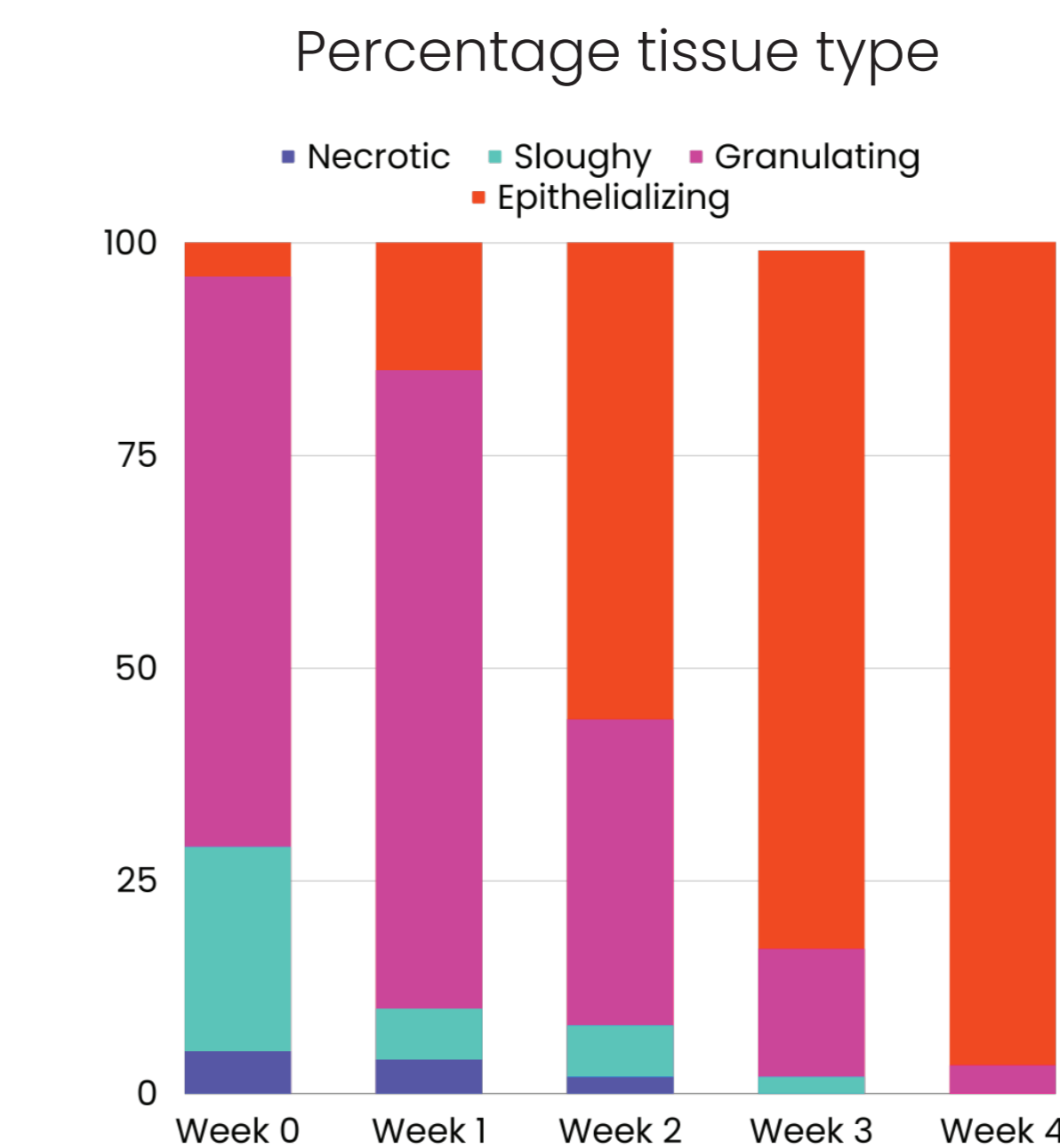
Results were obtained on venous leg ulcers (including a rare presentation of venous ulceration on foot dorsum and toes), a mixed leg ulcer, arterial ulcer (following trans metatarsal amputation).

In all five cases the dressing demonstrated:

- Controlled critical colonisation safely over time.
- Good absorbency capability and retention.
- Very good vertical absorption creating a balanced moist environment for epithelialisation promotion whilst protecting the periwound skin.
- Good absorption of mild fibrinous exudate.
- Reduction in both wound pain and inflammation after only 1-2 weeks.
- Easy to shape to wound depression areas and body curves.
- No dressing residue remained in wounds.
- No trauma or pain at dressing change.
- Overall, faster healing was promoted therefore MaxioCel was a cost-effective dressing option.

Results Charts

Patient ID	Wound aetiology	Wound duration (months)	Wound dimension (L x W x D) (cms)	Age	Sex	Comorbidities	Treatment days	Outcome	Final wound dimension
1	Arterial leg ulcer	8	4 x 0.5 x 0.2	63	Male	Peripheral arterial disease	28	Healed	-
2	Mixed aetiology leg ulcer	4	2.8 x 4.1 x 0.1	71	Male	Hypertension	21	Healed	-
3	Venous leg ulcer	2	2 x 2 x 0.3	86	Male	Diabetes, heart failure	28	Healed	-
4	Venous leg ulcer	2	0.9 x 0.3 x 0.2	43	Male	Diabetes, overweight	21	Healed	-
5	Venous leg ulcer	5	10 x 3 x 0.6	76	Male	Leg trauma, amputation	28	Almost healed	3.4 x 1.7



Case Study 1

71 year old male with a mixed aetiology static left leg ulcer of four months duration. Smoker, with hypertension, no other comorbidities.

On initial assessment:

- Wound dimensions 2.8cm length x 4.7cm wide x 0.1cm depth.
- Wound bed 25% necrotic, 75% granulation, with dry eczematous periwound skin due to moderate exudate.
- No infection present.
- VAS Pain score 5.
- Treatment aim to protect granulation tissue and manage exudate.

Date	Wound status	Wound bed condition	Exudate levels	Periwound condition	Presence of infection	Pain score (VAS)
30th June 2022	Improving	20% necrosis, 5% slough 75% granulation	Low	Healthy	None	3
7th July 2022	Improving	10% necrosis, 80% granulation 10% epithelialisation	Low	Healthy	None	1
14th July 2022	Wound healed sufficiently	Healed, 100% epithelialised	Dry	Healthy	None	No Pain

Throughout the evaluation a superabsorbent dressing was used as secondary dressing and reduced compression. MaxioCel did not stick to the wound, leave residue or cause any disruption / pain to the wound bed or periwound skin upon removal.



Initial Assessment 23rd June 2022



7th July 2022



14th July 2022

Discussion

Wound complexity increases the likelihood of wound chronicity. This study reports the positive outcomes on all five patients treated with MaxioCel and demonstrated effective reduction in wound chronicity and a direct impact on healing progression within the evaluation period, alongside a corresponding increase in healthy granulation tissue.

Conclusion

MaxioCel was well tolerated and significantly reduced pain perception in all 5 patients. Wound area reduction was clearly demonstrated with a swift transition from a chronic non-healing wound to granulation and eventual healing in 4 out of 5 cases.

As clinicians, we would highly recommend to our peers and will continue to use on other patients across our clinical practice.

References: (1) Guest JF, Fuller GW, Vowden P (2017) Venous leg ulcer management in clinical practice in the UK: costs and outcomes. Int Wound J 15(1): 29-37
 (2) Wounds UK (2016) Best Practice Statement: Holistic management of venous leg ulceration. London: Wounds UK. Available at: <https://bit.ly/2u3VSUT> (accessed 26.11.18)
 (3) Wounds UK (2019) Best Practice Statement: Addressing complexities in the management of venous leg ulcers. London: Wounds UK. Available to download from: www.wounds-uk.com