

THE USE OF A PHMB AND BETAINES SOLUTION* TO REDUCE COLONISATION AND BIOFILM IN A NON-HEALING REVASCULARISED LOWER LEG AND FOOT WOUND CAUSED BY TRAUMA PRIOR TO APPLICATION OF SKIN GRAFTING

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Introduction

The presence of biofilms/colonisation can significantly add to the delay and chronicity in the healing process. Bjarnsholt et al, (2008) described biofilms as a microbial colony encased in a polysaccharide matrix which attaches itself to a wound surface, producing destructive enzymes and toxins forcing the wound to be stuck in a chronic inflammatory phase. Regular topical debridement and one episode of surgical debridement failed to eradicate the biofilm and promote healing. However, a new treatment plan was implemented post surgical debridement to reduce bioburden prior to application of skin grafting.

Aim

The aim of this case study was to evaluate the clinical efficacy of a surfactant irrigation system, which includes Polyhexanide (PHMB) and Betaine. It evaluates the treatment and management of lower leg and dorsum of foot wounds post debridement to eradicate biofilms and to prepare the wound bed for skin grafting.

Method

A new regime was to surgically debride the lower leg and implement an irrigation system and cleaning of the lower leg twice daily with a PHMB and Betaine Solution* for 5 days, along with foot elevation. The management of lower extremity wounds can be complicated by infection, critical colonisation and oedema. Despite expert input from microbiologist the wound was colonised with *Pseudomonas aeruginosa* sensitive only to IV antibiotics. Biofilms generally are impenetrable by antibiotic therapy.

The patient Mr D, a 69 year old gentleman from Egypt sustained a wound on his lower leg following a massage treatment abroad. The wound failed to heal and black necrotic patches formed all over the lower leg. Mr D was a heavy smoker. Peripheral Vascular Disease was diagnosed and referred to a Vascular Surgeon for revascularisation. A vascular stent was inserted. The wound was allowed to demarcate. The wound was surgically debrided and skin grafted, the patient returned abroad. The patient returned a month later with the large portion of a failed skin grafting. The patient continued to commute between London and Egypt for follow ups. The wound was not responding to any topical treatment management, including surgical debridement. Therefore, a plan was implemented for Mr D to remain in London until treatment was successful, including foot elevation, reduction in bioburden to the wound and improved nutritional intake.

Mr D was admitted for surgical debridement followed by IV antibiotics, foot elevation and PHMB and Betaine Solution* leg/foot wash and PHMB and Betaine Solution* soaks for ten minutes twice daily for 5 days prior to skin grafting. On day 2 post op, the dressing was removed and continued with twice daily soaks for 10 days. Positive results were seen, the skin graft had taken and the patient was discharged.

Conclusion

The PHMB and Betaine Solution* was the latest of the many treatments implemented to reduce the chronic colonisation and bioburden that plagued this wound from not healing. The regime adopted appears to significantly have enhanced the take of the skin graft. Two culture swabs post grafting had produced no bacteria and the patient's outlook appears very positive.



References

Bjarnsholt-T, Kirketerp- Mallerk, et al Why Chronic Wounds will not heal - a novel hypothesis. Wound Repair Regen.2008 ;18: 2-10

* B. Braun Medical Ltd: Prontosan® Irrigation Solution