

# CASE STUDY: TREATMENT OF A COMPLEX INFECTED LEG ULCER WITH PRONTOSAN®

LIZ OVENS, CLINICAL SERVICE LEAD TISSUE VIABILITY

HILLINGDON COMMUNITY HEALTH AND CENTRAL AND NORTH WEST LONDON FOUNDATION TRUST

EMAIL: liz.ovens@nhs.net

## Background/Introduction

Biofilms can be difficult to actually clinically detect. Cutting (2011) suggests a sub-clinical infection or critical colonization, i.e. a suppressed immune response or no obvious clinical infection as being synonymous with Biofilm infection because the bacteria are in this "attached state". Phillips et al (2010) suggests that observation of slough in the wound bed may indicate the presence of biofilm in a wound. However, a case series undertaken (Hurlow and Bowler 2009) described patients with a film on the wound bed different to slough which required different treatment strategies. Further research is required to link the presence of slough tissue with biofilms. Actual confirmation of the presence of biofilm requires specialized microscopy which is not readily available in day to day practice.

Biofilms can cause delayed healing and a chronic inflammatory state. Encasing of the bacteria allows increased resistance to antibiotic therapy alone and they often require multiple strategies of regular debridement, topical antiseptics and larger and longer courses of antibiotics at the same time to be suppressed (Wolcott et al 2009).

In a retrospective review (Andriessen and Eberlein 2008) the use of Polyhexanide solution for cleansing of venous leg ulcers contributed significantly to optimization of the local wound environment, preventing secondary infection.

The surfactant properties of Polyhexamethylene Biguanide (Polyhexanide or PHMB) wound cleansing formulations can aid the removal of bacteria and debris and disturb the biofilm.

A case study was undertaken and photos and wound dimensions were recorded periodically prior to and during treatment. The patient is an 80 year old male with bilateral leg ulcers and oedema which had been present for 7 months and caused periodic episodes of bleeding. The patient had several episodes of hospital admission for cellulitis. However, the wound infection and cellulitis persisted and the chronic wounds remained unchanged suggesting the presence of biofilm in the wounds.

## Past Medical History

Aortic Valve Repair  
Bilateral Coronary Bypass Graph  
Bowel Tumour  
Congestive Cardiac Failure  
Asthma  
Mild CVA  
Benign Prostatic Hyperplasia

## Medication

Digoxin 250 mcg OD  
Movicol Nocte  
Warfarin – changing dose  
Furosemide 40 mgs OD  
Aspirin 75 mgs OD  
Tamsulosin 400 mgs OD  
Finasteride 5 mgs OD  
Co-Codamol 2 x 4-6 hrly

## Previous Treatments

SC admissions, IV antibiotics, Aquafibre dressings, foam dressings.

## Assessment

The patient had been receiving 2 - 3 times weekly dressings by the District Nursing Service. He presented to the Tissue Viability Team (TVT) on 7th July 2010 with bilateral leg ulcers (see photo 1 and 2). Extensive tissue loss to anterior, lateral and medial aspects of left leg approximately 65 cms sq and circumferential ulcers to right leg approximately 35 cms sq. Both wounds had 100% slough and necrotic tissue. Doppler assessment could not be undertaken due to high pain score of 6. The patient was only taking Paracetamol and was reluctant to take stronger analgesia. The patient was seen a few weeks later by the attending Vascular Consultant. No arterial component was detected and anti-gravitational measures, full compression therapy and antibiotics were prescribed.

The patient commenced treatment of Prontosan® wound irrigation solution soaks for 10 minutes, good skin care regime with emollients, topical silver foam dressing and reduced three layer bandage. The patient could not tolerate high compression due to high pain levels. Education was provided to the patient regarding management of leg ulcers and importance of taking regular analgesia. The analgesia would be reviewed regularly and continuing advice provided to encourage the patient to take a stronger analgesia which could be prescribed by the GP when the patient consented.

This regime was continued by the District Nursing Service for several weeks until the patient was then admitted to secondary care with Pneumonia, Congestive Cardiac Failure and Asthma and received intravenous antibiotics. Following discharge, although improved from his medical conditions the patient's leg ulcers had only minimally progressed, remaining painful with necrotic tissue present. The reduced compression therapy had been discontinued in hospital but the oedema had reduced due to IV diuretic therapy. Phone advice from TVT was given to the District Nurses to continue with the previous care plan and care was provided by them until he was seen again by the TVT on 27th September 2010.



Photo 1 Bilateral Leg Ulcers  
Anterior View July 2010



Photo 2 Bilateral Leg Ulcers  
Posterior View July 2010

## Progress and Results

Further assessment was undertaken although the TVT were still unable to undertake Doppler assessment due to pain score of 6. The patient had commenced Co-Codamol but was not taking it regularly. High compression therapy was still not tolerated. The wounds were beginning to debride and there was some evidence of epithelial tissue present. Treatment continued with Prontosan® wound irrigation solution soaks for 10 minutes, good skin care regime with emollients, topical silver hydrofibre dressing, reduced two layer bandage and education for the patient regarding anti-gravitational measures. Shared care was provided between the District Nurses and TVT.

Wounds to right leg were healed (see photo 5) on 7th October 2010 (12 weeks following treatment) and fitted with a reduced compression hosiery liner, providing 10 mmHg, since patient would not be able to apply Class 1 hosiery. Left leg wounds were improving with considerably less necrotic and slough tissue present although wounds were slightly malodorous (see photo 3 + 4). The oedema was being well controlled with simple two layer bandage. Pain score was greatly improved to 3/10 and Doppler assessment was undertaken. All pedal pulses were heard and pre-dominantly mono-phasic. ABPI right Leg 1.23 and left leg 1.30. Treatment continued with Prontosan® wound irrigation solution soaks for 10 minutes, topical Manuka Honey primary dressing and Hydrofibre for absorbency and the compression therapy was increased to three layer bandage.

Shared care continued and as the wounds improved the treatment then continued with Prontosan® wound irrigation solution soaks for 10 minutes, simple wound contact layer dressing and three layer bandage. Although the local presence of Biofilm appeared to have cleared it was deemed necessary to reduce further risk of infection particularly in light of the co-morbidities. Therefore cleansing with Prontosan® wound irrigation solution soaks for 10 minutes was continued to facilitate reduction of the bioburden.

On 4th Jan 2011 all wounds to left leg were healed and oedema remained controlled bilaterally (see photos 6 and 7). The patient was fitted for 2 x reduced compression hosiery liners and advice and education provided for on-going management and prevention of recurrence strategies.



Photo 3 Left Leg Posterior  
View October 2010



Photo 4 Left Leg Anterior  
View October 2010



Photo 5 Right Leg Wounds  
healed October 2010



Photo 6 Bilateral Leg Ulcers  
Anterior View healed Jan 2011



Photo 7 Bilateral Leg Ulcers  
Posterior View healed Jan 2011

## References

- Andriessen AE. and Thomas Eberlein T (2008) Assessment of a wound cleansing solution in the treatment of problem wounds. Wounds 6
- Cutting KF. (2011) Why use Topical antiseptics? The Silver Debate; a new consensus on what constitutes credible and attainable evidence. MA Healthcare Ltd.
- Hurlow J. and Bowler P. (2009) Clinical Experience with Wound Biofilm and Management. A case series. Ostomy Wound Management 55 (4) 38-49
- Thomas JG. (2008) Wound Microbiology. Advancing Your Practice; Understanding Wound Infection and the role of Biofilms.
- Phillips PL; Wolcott R, Fletcher J; Schultz GS. (2010) Wounds International 1 (3) Association for the Advancement of Wound Care (AAWC). Malvern, PA
- Wolcott R, Cutting KF. and Contreras Ruiz J. (2008) Biofilms and Delayed Wound Healing. Advancing Your Practice; Understanding Wound Infection and the role of Biofilms. Association for the Advancement of Wound Care (AAWC). Malvern, PA

## Conclusion

The extensive presence of necrotic devitalised tissue in the wound and severity of the pain suggested presence of chronic infection which had not previously been successfully treated with standard methods of antibiotic therapy and topical dressings suggesting the presence of biofilms. The patient had complex medical conditions preventing the use of high compression therapy. Despite several admissions to hospital for IV antibiotics the wounds did not improve. Commencing a combination treatment of Prontosan® wound irrigation solution, anti-microbial dressings, reduced compression therapy and patient education of anti-gravitational measures the patient's wounds progressed to healing. The patient became active, able to walk short distances and resume normal social activities improving quality of life. Healing of the wounds reduced costs to NHS in dressings and nursing time and secondary care episodes.