

Introduction

Compression therapy is the cornerstone of treatment of venous leg ulcer (VLU), appropriate wound dressing also play significant roles in treating VLU. They can optimise the local wound environment for healing and at the same time provide symptom control. However in recurrent resistant venous ulcers often are complicated by biofilm formation and fibrous granulation that require additional dressing strategies in achieving healing. Furthermore dressing used must retain its properties and withstand high pressures of 4-layer compression bandaging.

This case series examines 3 cases of recurrent resistant venous ulcer patients whom were successfully treated with the use of a broad spectrum antimicrobial foam in combination with 4-layer compression bandage. Each of them represent a different form of complexity due to variable unique factors, nevertheless represents a commonly encountered scenario of recurrence in complex nonhealing venous ulcer management.

Case Series

Case 1

Mr CKK aged 55 years old was initially diagnosed with chronic venous insufficiency of left leg since 2011 and has been having multiple left leg ulcers from 1998. He was previously treated with multiple dressing modalities including compressing bandaging at another centre without much success. He was never ulcer free since diagnosis and unfortunately ulcer expanded in size. He subsequently underwent left leg venous radiofrequency ablation procedure by the vascular team. The patient was referred to our care in February 2018. A biopsy was done in view extended chronicity of the ulcers prior to commencement of treatment. It confirmed the diagnosis of benign ulcers compatible with stasis dermatitis. His initial wound assessment showed 2 distal leg ulcer measuring 9.5cm x 6cm and 9.5cm x 6cm respectively. There were evidently abundant fibrotic granulation over wound bed and the surrounding skin was consistent a typical venous ulcer i.e hyperpigmentation and significant edema.

After patient counselling a management regime of 4 layer compression in combination with a broad spectrum antimicrobial foam was initiated in March 2018. After initial struggle with patient compliance, extensive wound bed fibrosis and critical colonisation of ulcers, the ulcers showed significant progress with complete eradication of fibrosis by May 2018. The ulcers eventually islanded of into multiple manageable smaller wounds that healed in progression as of August 2018. As time of reporting the patient unfortunately developed another partial thickness ulcer over anterior ankle that forced continuation of 4 layer compression bandaging with complete healing of the original wounds. However there initial ulcers have completely healed.

Case 2

Mr SKK, aged 60 years has been living with left leg venous ulcer for more than 10 years. Previous attempts of compression and modern dressing remained futile. Subsequently radiofrequency ablation was done in June 2017 following diagnosis of an incompetent left saphenopopliteal junction. Initially post operative his wounds healed and managed with compression stocking alone. However within 6 months of post operative period the wound recurred which was resistant to initial dressings.

Initial wound measured 2.5 x 5 cm with 40% granulation and 60% slough. His surrounding skin were verrucous in texture. The antimicrobial foam and 4 layer compression regime was

initiated in May 2018. His ulcer healed within 6 weeks of treatment and compression stocking was reinstated in Jun 2018. As of August 2018 he is still ulcer free with an improved skin quality.

Case 3

The third case of a rather unfortunate 45 year old male, MR with underlying antiphospholipid and uncommon male Systemic Lupus Erythematosus. This obese man also developed bilateral chronic venous insufficiency with chronic DVT. He has been living with bilateral leg venous ulcers since 1998 (20 years). In his 2 decade struggle with the ulcers he has had many ulcer recurrences but was never ulcer free. Initially in 2016 he was managed with 4 layer compression with various wound dressings. His ulcer actually healed but however it took almost 2 years for complete healing. Unfortunately he again developed venous ulcer over left gaiter area within 3 months. To complicate thing further, this patient was deemed unfit for operative intervention due to his uncontrolled comorbid condition and long term steroid and anticoagulant therapy. 4 layer compression bandage therapy was recommenced with combination of hydrofibre and foam dressing. However this time around the strategy didn't work. The wound kept getting bigger over the course of 3 months. A decision was made in March 2018 to initiate RTD foam and 4 layer compression bandage therapy. Dressing changes were done weekly. The wound at commencement of treatment was 15.3 cm² in size with 80% granulation tissue and 20% slough. There were moderate serous exudate with a healthy wound edge. However the surrounding skin was dry. This wound healed within 6 weeks of treatment in April 2018 with RTD use stopped at that point but 4 layer compression bandage was weaned off after another 2 weeks. The edema control was continue with compression stocking. He has been ulcer free for 4 weeks at the time of writing.

Discussion

The typical problem in VLU is they are highly exudative and the exudate contain inflammatory cytokines which are capable of damaging the periwound skin. Besides that, as VLU runs in a chronic course, wound bed are constantly colonized by bacteria, which if overwhelming, may proceed to local infection. A broad spectrum antimicrobial dressing containing methylene blue, gentian violet and silver ion incorporated into a medical grade polyurethane foam offer a solution to the above issues. Methylene blue is historically proven safe antimicrobial which attacks gram negative bacteria. It is also acts as catalyst for singlet oxygen which aids in its antimicrobial activity. Gentian violet is both antibacterial and antifungal and the silver ions kills bacteria as it comes into contact with the wound exudate. The silver ions are slowly and continuously released in proportionate to the amount of exudate. Besides highly absorbent, the polyurethane foam applies capillary suction therapy which pulls liquefied biofilm and bacteria from wound bed. It also aids in autolytic debridement. With all these features, it suits the wound bed preparation needed for these complex venous ulcer to achieve wound closure. Despite being used over a long period (the longest being 21 weeks), none of these patient exhibit silver toxicity, in concordance with previous study that showed most of the silver component is antimicrobial dressings which is released into the wound bed is deposited superficially and that minimal levels are available for absorption. However, this dressing must be combined with compression therapy to achieve healing.

References

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Case 1



Before

After

Case 2



Before

After

Case 3



Before

After