

Introduction

Wounds managed in a moist environment heal faster with less pain, fewer infections, and better cosmesis⁽¹⁻³⁾. This suggests a dry scab on an exposed wound was an impediment for wound healing.

A moist environment (as opposed to a dry environment leading to a desiccated wound) facilitates healing through the retained presence of growth factors and presence of matrix materials, improved keratinocyte migration, fibroblast growth and maintenance of the electrical gradient within the wound bed and at the wound edge⁽⁴⁾.

A novel therapeutic delivery system has recently been developed and cleared by the FDA. ACTON™ Topical Delivery System (Aplion Medical Corporation, Salt Lake City, Utah) is a semi occlusive wound dressing that can provide continuous delivery of fluid at a rate of approximately ¾ cc per day.

Prescribed medications, solutions, or topical agents can be delivered via this device to the wound maintaining a hydrated and/or medicated environment. This type of system is advantageous in situations where there are impediments to systemic therapies, when wounds are <100 cm², when wounds may require frequent application of medication or moisture, on wounds that can benefit from pain control, and from low and steady delivery of medications.

Some drugs are suitable for sustained delivery and may prove useful in the system including: Anesthetics, Antiseptics, Antibiotics, Steroids, Topical beta-blockers, Immune-modulatory agents, Growth factors, Fibrinolytic agents, Anti-inflammatory Agents, Sodium Thiosulphate (STS).

Lidocaine, part of the amide group of anesthetics is the most available and accessible representative drug of this class. The more commonly used presentation of anesthetics for cutaneous procedures is the injectable form, lidocaine hydrochloride, which is a sterile, nonpyrogenic aqueous solution.

The proposal of a system that delivers the medication continuously at a steady low rate seems to be an alternative to circumvent the short time of effect after only a one-time application. This medication should be used with caution in patients that have compromised liver function as this can alter lidocaine kinetics.

Case Report

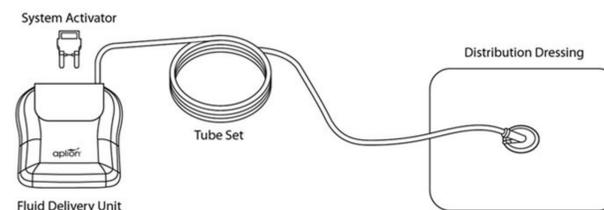
As an example of this technology, we present a case where anesthesia was delivered for pain relief.

A 78-year-old male with severe peripheral vascular disease presented with two intensely painful left leg ulcers of 6 month duration. On physical examination, the left leg was red and tender with two 2 cm x 2 cm superficial granulating ulcers.

The patient agreed to receive 2 distinct topical treatments through the delivery system to each wound. Lidocaine delivered to one wound and saline to another for a week. After one week there was significant pain decrease in the lidocaine treated ulcer (from 9/10 to 5/10) and a slight decrease of pain with the use of saline (from 9/10 to 8/10).

Device

The device is composed of a Fluid Delivery Unit, a tube set connection, and a Distribution Dressing.



Results

With this experience with the Acton system, we were able to witness the positive effect of local medication delivery to a painful wound. Acton is therefore appealing as a safe and effective treatment of wounds as it avoids the systemic effects of drug therapy.

Additional benefits include steady rate of medication delivery, and that the system does not depend on the patient or on a skilled wound care nurse for frequent dressing changes.

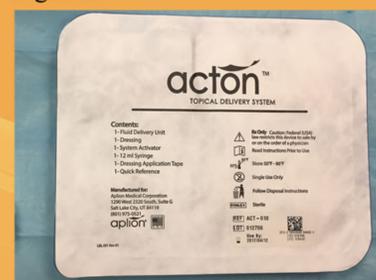
Conclusion

Acton system has shown to significantly help a patient with pain related to the wound. Contact dermatitis to the dressing adhesive or the maceration may occur. The Acton system is a promising form of therapy delivery that will bring convenience and ease of use of therapy that would otherwise not be applied to patients at an optimal rate.

References

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Figure 1



Acton package.

Figure 2



Fluid delivery unit; system activator.

Figure 3



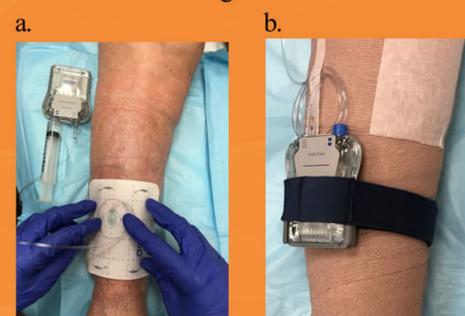
Distribution dressing; tube set; 12ml Syringe.

Figure 4



Examples of post-application.

Figure 5



Dressing application and placement of unit on top of bandage dressing.

