

The use of a bacterial imaging fluorescence detection technology for wound bed preparation, aided with the use of pure Hypochlorous Acid (pHA)* preserved cleanser

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BACKGROUND

Cleansing chronic wounds to remove bacterial burden is standard of care. Wound irrigation with wound cleanser solutions, which is an essential step to cleanse, irrigate, moisten, and mechanically debride the wound, facilitates healing in acute and chronic wounds. A pure Hypochlorous Acid (pHA) based cleanser, has been utilized as a powerful antimicrobial preservative in wound irrigation solutions recently with positive clinical benefits. pHA, and the preservative in it, hypochlorous acid (HOCl) has also been shown to pose lower levels of cytotoxicity than other preservatives present in cleansing agents. In this prospective study, fluorescence imaging of bacterial burden was used to evaluate the efficacy of the pHA based cleansing agent.

TREATMENT METHOD

Fluorescence imaging was performed on 6 patients with chronic venous leg ulcers. Subject mean age was 75.7 years, with 4 females and 2 males, and a mean wound duration of 14 months. Pre and post cleansing and mechanical debridement (if necessary) images were captured using a fluorescence imaging device. The pHA cleanser in the form of a <0.033% HOCl solution was applied to the wound and peri-wound area. Cleansing involved a vigorous 30 second scrubbing of the wound bed after application of the cleansing agent.

CASES - BEFORE & AFTER

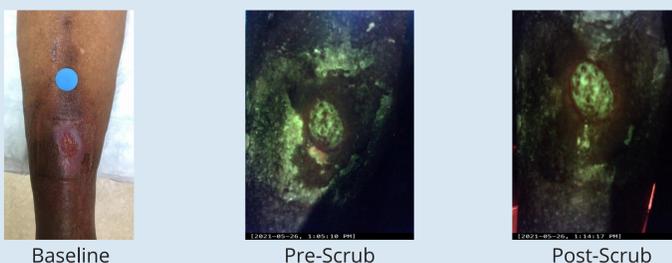
CASE 1 - SUBJECT 25



CASE 2 - SUBJECT 26



CASE 3 - SUBJECT 43



CASE 4 - SUBJECT 44



CASE 5 - SUBJECT 45



CASE 6 - SUBJECT 46



RESULTS

Scrubbing action, utilizing a pure Hypochlorous Acid (pHA) solution was effective in reducing red fluorescence of *S. Aureus* as well as the cyan signal from *Pseudomonas*. Serial imaging displayed a distinct reduction in bioburden over the wound and surrounding area. *Pseudomonas* colonization proved to be more difficult to remove and required more scrubbing.

CONCLUSION

The high propensity of *Pseudomonas* to form microbial colonies that are hard to remove, may have contributed to the difficulty in removing its signal. The pHA, i.e. the HOCl preserved cleanser solution (~0.033%) we studied is evidence based in terms of its ability to mechanically remove germs. The HOCl based cleansing agent chosen for this presentation also exhibit low levels of cytotoxicity and do not inhibit the natural wound healing process at a cellular level, likely due to the ubiquity or common presence of the HOCl molecule in the function of immune cells which are very involved in wound healing and in the maintenance of homeostasis. Vigorous scrubbing with the cleanser is strongly recommended to disrupt microbial colonies. Choice of cleansing agent should not be made on the basis of immediate and dramatic reduction in germ levels seen via fluorescent imaging, as caustic (to tissue) solutions will likely yield more dramatic images, yet evidence shows that they invariably kill living cells.

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* Vashe® Wound Solution, Urgo Medical North America

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