

The Importance of Super Oxidised Solution in the Management of Thermal Burn Wounds

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Abstract

Proper dressing and treatment of thermal burn sites is critical not only for infection control but also for future surgical intervention. This article highlights our findings on the efficacy of Super Oxidised Solution in locally healing thermal burn lesions. In a case report on an 82-year-old female with thermal burns over the right thigh region, Super Oxidised Solution improved wound healing and prepared wounds for definitive covering by increasing granulation and minimizing infection, all of which are necessary for surgery.

Keywords: Super Oxidized solution, thermal burns, wound management

INTRODUCTION

Various agents, including Povidone Iodine, EUSOL, acetic acid, hydrogen peroxide, silver sulfadiazine, and local antibiotic ointments, have long been used to manage thermal burns¹. These treatments aim to prevent infection, lower bacterial load, and promote granulation for effective wound healing. A newer approach in wound management is the use of Super Oxidized Solution. This solution, which has a hypotonic nature and an osmolarity of 13 mOsm/kg, contains components such as hypochlorous acid, sodium hypochlorite, chlorine dioxide, ozone, hydrogen peroxide, and sodium chloride. It is produced through an electrochemical process that combines pure water and sodium

chloride, generating reactive oxygen and chlorine species during electrolysis. These reactive species disrupt the integrity of single-celled organisms' membranes, causing lipid and protein denaturation due to osmolarity imbalances. In contrast, multicellular organisms are less affected by these osmolarity changes².

MATERIALS AND METHODS

In this study, an 82-year-old male with 35% thermal burns on his left upper limb (*see Fig. 1*) was treated at the Department of Plastic Surgery, JIPMER, Puducherry, India, in May 2024. The study received ethical approval from the institutional review board.

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Fig. 1: Showing thermal burns over the left upper limb region at time of presentation (BJWAT Score 30)

The patient underwent a comprehensive clinical examination, along with essential tests including hemoglobin levels, total and differential white blood cell counts, bleeding time, clotting time, erythrocyte sedimentation rate, random and/or fasting blood sugar, serum creatinine, blood urea, HIV, HBsAg, and a complete urine examination to evaluate fitness for anesthesia and to rule out any underlying systemic issues. Additionally, wound swabs were cultured to identify organisms and their antibiotic sensitivities.



Fig. 3.2: Showing application of super oxidized solution over thermal burns over the upper limb region

The wounds were irrigated daily with Super Oxidized Solution (see Fig. 2) and dressed with gauze soaked in the same solution. Blood sugar

levels were managed with insulin and/or oral hypoglycemic medications, with guidance from an endocrinologist. The treatment with Super Oxidized Solution led to positive outcomes, with the wounds showing healthy granulation as local treatment progressed. As the condition of the wound bed improved, it enabled the performance of skin grafting. The study tracked bacterial growth status, time to achieve wound sterility, appearance of granulation, healing duration, and any associated complications.

RESULTS

The application of Super Oxidized Solution significantly accelerated wound healing, demonstrating its effectiveness in promoting recovery. Regular use of the solution led to notable improvement in the wounds, with the wound score from 32 to 25BJWAT (Fig.1 & 3).



Fig. 3: Figure showing condition of the wound after utilization of super oxidized regenerative therapy (BJWAT wound score - 26)

DISCUSSION

The prevalence of thermal burns whether accidental or self-inflicted is notably high, necessitating a multidisciplinary approach to manage both the burns and their complications, as they can impact multiple organs and systems.³ Thermal burn wounds present significant challenges for clinicians and have traditionally been treated with a variety of local dressings and agents.⁴

Super Oxidized Solution offers a modern method for wound management and has been researched globally as a disinfectant for instruments. It has

been used in various human applications, including the treatment of ulcers, mediastinal irrigation, peritoneal lavage, and handwashing.⁵⁻⁷ This solution received approval as a Medical Device Class IIb by the European CE KEMA in 2004 and by the FDA in 2005, showing promising results in wound management across different causes, with no adverse reactions or complications reported in the literature⁸.

In our study, we concentrated on thermal burn wounds, applying Super Oxidized Solution for cleansing and sterilization. After five days of treatment, the wounds achieved sterility, which allowed for subsequent full-thickness skin grafting surgery once healthy granulation was observed⁹.

Consistent with prior studies, we found no significant complications associated with Super Oxidized Solution use¹⁰. It effectively aids in debriding necrotic tissue, reducing microbial load, promoting granulation, and speeding up healing without harming normal tissue. For patients with small superficial ulcers or those who are not candidates for definitive surgery, conservative management with Super Oxidized Solution alone may be adequate. Its moisturizing properties and low toxicity make it an appealing option for managing thermal burn ulcers. However, further controlled trials are necessary to fully understand its antimicrobial, anti-inflammatory, and wound-healing benefits¹¹.

CONCLUSION

Super Oxidized Solution demonstrates significant benefits in promoting wound healing across a wide range of cases, whether acute or chronic, and regardless of their underlying causes. Its application is valuable not only for burn injuries but also in cosmetic surgery. Our case report findings confirm that Super Oxidized Solution enhances wound healing for various types of wounds.

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