

# Utilizing Superoxidized Solution for Electrical Burn Wound Management

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## Abstract:

Effective dressing and preparation of electrical burn wounds are crucial not only to prevent infections but also for potential surgical treatment. This article explores how well Super Oxidized Solution works in treating electrical burn wounds directly. In our case study involving an 8-year-old boy with burns on his scalp from electricity, we found that using Super Oxidized Solution helped the wounds heal by encouraging tissue growth and lowering the risk of infection.

**Keywords:** superoxidized solution; electrical burns; wound management

## Introduction

Different substances such as Povidone Iodine, EUSOL, Acetic acid, hydrogen peroxide, silver sulfadiazine, and local antibiotic ointments have traditionally been used to treat electrical burns<sup>1</sup>. These dressings help prevent infection, lower the number of bacteria, and encourage new tissue growth to help wounds heal. Super Oxidized Solution is a new way to manage wounds. This solution has low pressure and contains things like Hypochlorous acid, Sodium hypochlorite, Chlorine dioxide, Ozone, Hydrogen peroxide, and Sodium chloride. It's made by using electricity on pure water and salt. Super Oxidized Solution releases oxygen and chlorine when it's made. These substances can damage the outer layer of single-celled organisms, which makes them less able to work properly. However, larger organisms aren't as affected by these changes in pressure<sup>2</sup>.

## Materials and Methods

In this study, a 8 year old boy with electrical burns over scalp (Figure 1) was enrolled and managed at the Department of Plastic Surgery, JIPMER,

Puducherry, India. He underwent thorough clinical examination, and essential investigations such as Hemoglobin, Total Count, Differential Count, Bleeding Time, Clotting Time, Erythrocyte Sedimentation Rate, Random and/or Fasting Blood Sugar, Serum Creatinine, Blood Urea, HIV, HBsAg, and Complete Urine Examination were conducted to assess anesthesia fitness and rule out underlying systemic conditions. Additionally, wound swabs were cultured to identify the type of organism and its antibiotic sensitivity. The wounds received daily irrigation with Super Oxidized Solution (Figure 2, Figure 3) and were dressed with gauze soaked in the same solution. The wounds responded to treatment with Super Oxidized Solution, and exhibited healthy granulation following local treatment with Super Oxidized Solution. Although he was fit for surgery or anesthesia, his wound condition improved by just local dressings with Super Oxidized Solution exclusively (Figure 4). The study documented the status of bacterial growth, time required for wound sterility, granulation appearance, healing duration, and any associated complications.



**Figure 1:** showing condition of scalp electrical burns wound at time of presentation



**Figure 2:** showing application of super oxidized solution over the scalp electrical burns wound



**Figure 3:** showing application of super oxidized spray over the scalp electrical burns wound



**Figure 4:** showing near complete healing of scalp electrical burns wound at time of discharge

## Results

The application of superoxidized solution was observed to accelerate the process of wound healing, providing evidence that utilizing this solution is beneficial for promoting the recovery of electrical burns wounds.

## Discussion

The prevalence of electrical burns is significant, arising from various causes like accidents or self-inflicted injuries. Treating electrical burns and their complications requires a comprehensive approach due to their impact on different parts of the body. Historically, clinicians have employed various local treatments and substances for managing electrical burn wounds<sup>3</sup>. One newer method for wound management is the use of Super Oxidized Solution. This solution has been studied globally as a disinfectant for medical tools and has been applied to humans for different purposes, such as treating ulcers, cleaning body cavities, and sanitizing hands<sup>4,5</sup>. It received approval from European and American regulatory bodies for medical use, with positive outcomes reported in wound care across different causes. Our study focused on using Super Oxidized Solution to clean and sterilize electrical burn wounds. After applying the solution for six days, we observed that the wounds became sterile, and healthy tissue growth occurred following the application of Super Oxidized Solution. Similar to previous research, we didn't encounter any notable complications with the use of Super Oxidized Solution<sup>6</sup>. It helped remove dead tissue, lower the number of harmful microorganisms, promote tissue growth, and speed up the healing process without causing harm to healthy tissue. For patients with small surface wounds or those not suitable for surgery, using Super Oxidized Solution alone could be sufficient. Its moisturizing properties and low toxicity make it a promising option for managing electrical burn wounds<sup>7-11</sup>. However, more controlled studies are necessary to fully understand its antimicrobial, anti-inflammatory, and wound-healing effects.

## Conclusion

Super oxidized solution proves beneficial in promoting wound healing in across a spectrum of cases, regardless of whether they are acute or chronic and irrespective of their underlying causes. Its utility extends to electrical burns injuries as well as within the realm of cosmetic surgery. Our case report findings affirm that super-oxidized solution contributes to enhanced wound healing across diverse wound types.

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