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Case Report

# Role of sucralfate in burn wound bed preparation and wound healing

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ABSTRACT

A typical issue that arises after burns, injuries, or infections is a wound. There are several ways to cover the raw region and reduce the infection. However, there isn't a tried-and-true technique that quickens the process of wound healing. Sucralfate is used to treat duodenal and stomach ulcers. Recent research on the topical treatment of various epithelial wounds, including ulcers, inflammatory dermatitis, mucositis, and burn wounds, has demonstrated the therapeutic effects of sucralfate. This article emphasizes the function of sucralfate in preparing the wound bed and promoting wound healing.



## 1. Introduction

The wound is a frequent challenge for doctors. Many approaches exist, with differing degrees of success.[1] Grafts or flaps are frequently needed for large wounds in order to cover the wound, however this requires first preparing the wound bed. There are several techniques available to improve the preparation of the wound bed. The acronym T.I.M.E. stands for Tissue management, Infection control, Moisture regulation, and wound edge management, and it is used to describe how wounds are maintained. Sucralfate has long been used to treat ulcers in the stomach and duodenum. Benefits for skin lesions have been demonstrated in certain trials. In this post, we describe our experience preparing the wound bed and promoting wound healing after applying sucralfate in a case of thermal burns.

## 2. Materials and Methods

This study was conducted in the Department of Plastic Surgery at a tertiary care center after getting the departmental ethical committee approval. Informed written consent was taken from the parents of the patient. The study subject was a male 42-year-old male without co morbid conditions who developed a grade 2, 38% TBSA in his chest, neck and both upper limbs (Figure 1) as a result self-intentional burns with petrol. He was alone when this happened.

The patient was admitted to the Burns ICU and was given painkillers, antibiotics, and IV fluids. Bandages are applied, and healing measures are taken (Figure 2).

After debridement of the wound (Figure 2), sucralfate cream was applied uniformly on the wound (Figure 3).

Over that non-adherent dressing was placed, and the dressing was done. Every third or fourth day, the dressing was opened, and the wound was assessed. Repeat debridement was done if found necessary and sucralfate was applied, and the dressing was done till wound bed is

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**Figure 1:** At the time of presentation

**Figure 2:** Before application of the sucralfate cream


**Figure 3:** Application of the sucralfate cream

**Figure 4:** After wound bed preparation and was planned for skin grafting

prepared and parts of the wound are healing

## 3. Result

Following the administration of sucralfate, the wound began to granulate and there was less slough and pus discharge. Following a three-week period of six sucralfate therapy sessions, the wound bed was ready for grafting (Figure 4). The wound had healed entirely in some places. There were no unfavorable local or systemic effects associated with sucralfate treatment.

## 4. Discussion

The four traditional phases of wound healing are hemostasis, inflammatory, proliferative, and maturation. Wound healing is a complex phenomenon. There are overlaps between these periods. The hemostasis phase, which results in the creation of the platelet block, starts soon after the damage. Numerous growth factors that trigger the inflammatory phase are released as a result of the activation of the complement and platelet systems. This phase is characterized by the recruitment of leucocytes, first neutrophils and then lymphocytes and macrophages. Numerous growth factors are released by macrophages, including vascular endothelial growth factor (VEGF), basic fibroblast growth factor (bFGF), transforming growth factor (TGF-beta and TGF-alpha), and platelet-derived growth factor (PDGF). The maturation phase, collagen deposition, angiogenesis, proliferation, and extracellular

**Figure 5:** Final wound after healing

matrix (ECM) deposition are all brought on by these growth factors. The global management of the wound to promote endogenous healing or enhance the efficacy of various therapeutic interventions has been redefining wound bed preparation. T.I.M. can be used to summarize wound bed preparation, E for tissue, and T for non-viable or inadequate. M stands for moisture balance, and I for infection/inflammation. E stood for epidermis, but later on, it was altered to E for edge. The migration of the wound edge toward the dressing may be facilitated by debridement, inflammation control, and moisture management; however, in the event that these measures prove ineffective, alternative therapeutic interventions may be necessary. Numerous treatment approaches are available to promote wound healing, including the topical administration of insulin, growth hormones, negative pressure assisted wound closure, hyaluronic acid conjugated with oxidized regenerated cellulose/collagen. Sucralfate is the disaccharide sucrose octa sulfate's aluminum hydroxide salt. It is established that sucralfate plays a part in duodenal and stomach ulcers. It covers the ulcer and creates a gel of mucus that attaches itself to the bile acids. Studies have been done on the function of sucralfate in a number of different ulcerative lesions. According to certain research, it aids in the healing of persistent venous ulcers[1,2]. Research has demonstrated that sucralfate accelerates the process of epithelialization and fosters the development of sound granulation tissue in burns of the second and third degrees[3–5]. It both prevents and aids in the healing of ulcers caused by radiation[6]. In wound healing, sucralfate acts by a complex system. Sucralfate increases the bioavailability of growth factors and prostaglandins and decrease the production of oxygen free radical synthesis, thus potentiating angiogenesis, granulation tissue, as well as reepithelialization. It also increases the bioavailability of growth factors, particularly of FGF. It increases the formation of prostaglandins and inhibits oxygen free radicals[5]. Ala S. et al.[6] found no effect of sucralfate in the healing of pressure ulcers. In our case, we have used sucralfate cream as adjunct to other measures in the case of the thermal burn induced ulcer. The commercially available sucralfate cream also contains xylocaine that helps in pain relief also. No adverse effect was noted with its application.

## 5. Conclusion

Topical sucralfate therapy was found to be helpful in management of burn wound as it causes improvement of the granulation tissue and early healing. Long-term multi-Centre clinical observations are needed to determine whether topical sucralfate can be used for wound bed preparation.

Following the administration of sucralfate, the wound began to granulate and there was less slough and pus discharge. Following three weeks of six sucralfate therapy sessions, the wound bed was ready for grafting, certain areas of the wound had fully healed, and grafting was scheduled (Figure 4). There were no unfavourable local or systemic effects associated with sucralfate treatment.

## 6. Conflict of Interest

None.

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