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CASE REPORT

Role of Topical Sucralfate in the Management of Pediatric Facial Burns: A Case Report

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ABSTRACT

Background: Facial burns in children require prompt and effective management to promote rapid epithelialization, prevent infection, minimize pain, and achieve optimal cosmetic outcomes. Sucralfate, a cytoprotective agent widely used in the treatment of peptic ulcer disease, has recently emerged as a promising topical agent for wound healing because of its ability to enhance tissue regeneration and epithelial repair.

Case Presentation: A 9-year-old boy presented with a superficial second-degree facial thermal burn following an accidental cracker burst injury. After initial wound cleansing and gentle debridement, topical sucralfate cream was applied and covered with a non-adherent dressing. Dressings were changed every 24–48 hours with repeat application of sucralfate. The wound demonstrated rapid epithelialization and healed completely within 4–5 days without surgical intervention or complications.

Conclusion: Topical sucralfate may serve as a safe, inexpensive, and effective adjunct in the management of superficial pediatric facial burns by promoting rapid epithelialization and satisfactory cosmetic healing. Larger prospective studies are required to establish its efficacy.

KEYWORDS

• Sucralfate • Pediatric burns • Facial burns • Wound healing • Topical therapy • Burn management

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INTRODUCTION

Burn injuries are among the leading causes of morbidity in the pediatric population, with facial burns posing unique reconstructive and cosmetic challenges. Rapid wound healing is essential to minimize the risk of infection, hypertrophic scarring, pigmentary changes, and functional impairment. Modern wound care is based on the T.I.M.E. principle, which emphasizes tissue management, infection and inflammation control, moisture balance, and advancement of the wound edge to optimize healing.[1]

Sucralfate is a basic aluminum salt of sulfated sucrose that has traditionally been used in the treatment of gastric and duodenal ulcers because of its cytoprotective properties. Increasing evidence suggests that these properties can also be utilized in cutaneous wound healing. Topically applied sucralfate has demonstrated beneficial effects in burns, chronic venous ulcers, traumatic wounds, radiation-induced dermatitis, inflammatory dermatoses, and oral mucositis. It promotes wound healing by enhancing angiogenesis, fibroblast proliferation, extracellular matrix deposition, and epithelial regeneration while reducing oxidative stress and inflammation.[2]

Although its role has been evaluated in various wound types, reports describing its use in pediatric facial burns remain limited. We present a case of successful management of a superficial second-degree facial burn in a child using topical sucralfate.

MATERIALS AND METHODS

This study was conducted in the Department of Plastic Surgery at a tertiary care teaching hospital after obtaining approval from the Institutional Ethics Committee. Written informed consent for treatment and publication was obtained from the patient's parents.

A 9-year-old boy with no significant past medical history presented with a superficial second-degree thermal burn involving the face following an accidental cracker burst injury. Clinical examination revealed erythema, blistering, and exposed superficial dermis without evidence of deep dermal injury, inhalational injury, or ocular involvement (Figure 1).



Figure 1: Superficial second-degree facial burn at presentation following accidental cracker burst injury

The patient was admitted to the Burns Intensive Care Unit for observation and wound management. Standard burn care, including analgesia, fluid management, and routine monitoring, was initiated. Following wound cleansing and gentle debridement of loose nonviable tissue (Figure 2), topical sucralfate cream was applied uniformly over the burn surface (Figure 3). A sterile non-adherent dressing was placed over the wound.



Figure 2: Uniform application of topical sucralfate cream over the burn wound



Figure 3: Complete epithelialization of the facial burn after five days of topical sucralfate therapy

Dressings were changed every 24–48 hours under aseptic precautions. During each dressing change, the wound was assessed for infection, epithelialization, and progression of healing. Fresh topical sucralfate was applied after every assessment until complete wound healing was achieved.

RESULTS

Following topical application of sucralfate, rapid clinical improvement was observed. Progressive reduction in erythema and wound exudate occurred within the first few days of treatment. Healthy epithelialization became evident early, and complete healing of the superficial second-degree facial burn was achieved within 4–5 days without the need for surgical intervention or skin grafting.

No wound infection, excessive slough formation, allergic reaction, or other local or systemic adverse effects were observed during treatment. At follow-up, the healed skin demonstrated satisfactory cosmetic appearance without hypertrophic scarring, contracture, or clinically significant pigmentary changes.

DISCUSSION

Wound healing is a dynamic biological process consisting of four overlapping phases: hemostasis, inflammation, proliferation, and remodeling. Immediately following tissue injury, platelet activation initiates coagulation and releases cytokines and growth factors that recruit inflammatory cells to the wound. Activated macrophages subsequently release several mediators, including platelet-derived growth factor, transforming growth factor-α, transforming growth factor-β, basic fibroblast growth factor, and vascular endothelial growth factor. These factors stimulate angiogenesis, fibroblast proliferation, extracellular matrix synthesis, collagen deposition, and re-epithelialization.

Delayed wound healing is commonly associated with prolonged inflammation, excessive oxidative stress, impaired angiogenesis, and reduced availability of growth factors.

Topical sucralfate facilitates wound healing through several complementary mechanisms. It forms a protective barrier over the wound surface, maintains a moist environment, binds to proteins within wound exudate to create a stable protective complex, enhances the local activity of growth factors, stimulates angiogenesis and fibroblast proliferation, promotes collagen synthesis, increases prostaglandin production, reduces oxygen free radical-mediated tissue injury, and accelerates epithelial regeneration.[3]

Previous studies have demonstrated the beneficial effects of topical sucralfate in burn wounds, chronic venous ulcers, radiation dermatitis, oral mucositis, pressure injuries, and traumatic wounds. Banati *et al*. reported accelerated epithelialization and healthy granulation tissue formation in second- and third-degree burns treated with topical sucralfate. Similarly, randomized controlled studies have demonstrated improved healing in chronic venous ulcers, while investigations in radiation-induced skin injury have shown reduced severity of radiation dermatitis.[4,5]

Facial burns in children require meticulous wound care because of the functional and cosmetic importance of the face. In the present case, topical sucralfate promoted rapid epithelialization with complete wound healing within five days, excellent cosmetic outcome, and no treatment-related complications. Its favorable safety profile, ease of application, and low cost make it an attractive adjunctive option in the management of superficial pediatric facial burns.[6]

However, this report describes a single patient, and conclusions regarding efficacy cannot be generalized. Larger prospective randomized controlled trials are necessary to establish the effectiveness of topical sucralfate

and define its role in standard burn care protocols.

CONCLUSION

Topical sucralfate appears to be a safe, inexpensive, and effective adjunct in the management of superficial second-degree pediatric facial burns. Its ability to promote epithelialization, enhance tissue regeneration, reduce inflammation, and maintain a favorable wound environment may contribute to faster healing and improved cosmetic outcomes. Further well-designed randomized controlled studies are needed to confirm these findings and establish evidence-based recommendations.

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