

Role of Aloe-Vera in Scar Management in Electric Burns

Kanav Gupta¹, Ravi Kumar Chittoria², Jacob Antony Chakiath³

How to cite this article:

Kanav Gupta, Ravi Kumar Chittoria, *et al.*, Role of Aloe-Vera in Scar Management in Electric Burns. RFP Jr of Drea 2024;9(2):51-54.

Abstract

Aloe-vera is well known for the cost effect positive actions it has on the skin, with a very minimal risk profile. The anti-inflammatory, wound healing & anti-ageing effects of aloe-vera on the skin have been extensively studied & discussed. Similar effects may be demonstrated & observed on burn wounds. We tested the aloe-vera gel on a patient with electric burns post split skin grafting at the donor site& observed the progression of the wound. Unsurprisingly, we observed that wound healing was considerably enhanced by the aloe-vera gel application

Keywords: Aloe-vera; Burns; Electric burns; Management; Wound healing.

INTRODUCTION

Scald injuries are described as burns to living tissue from hot liquids. Despite the ubiquitous nature, a complete understanding of the management of scald is not yet available. Classically it is managed with regular anti bacterial/ collagen dressings in addition to antibiotics, fluids & analgesics. Aloe-vera has been used to treat wounds since time immemorial. The broad spectrum of action of Aloe-vera can be attributed to numerous components existing in the gel, about 75 of them which include enzymes, vitamins, minerals & amino acids. It is also found to contain lignin, saponins & salicylic acids.¹ The pain & anti-inflammatory action can

be attributed to the presence of prostaglandin and bradykinin-hydrolyzing enzymes, carboxypeptidase and bradykinase. Additionally, mannose-6-phosphate, promotes epithelialization and tissue organization, also induces fibroblast proliferation, activates collagen deposition,² and accelerates wound healing. However, its clinical evidence is still unclear. Hence this case report, we demonstrate the efficacy of aloe-vera in electric burn healing.

MATERIALS AND METHODS

This study was conducted in the Department of Plastic Surgery in a tertiary care centre in South India after obtaining the departmental ethical

Author's Affiliation: ¹Senior Resident, ³Assistant Professor, Department of Plastic Surgery, ²Senior Professor and Associate Dean (Academic), Head of IT Wing and Telemedicine, Department of Plastic Surgery and Telemedicine, JIPMER, Puducherry 605006, India.

Corresponding Author: Ravi Kumar Chittoria, Senior Professor and Associate Dean (Academic), Head of IT Wing and Telemedicine, Department of Plastic Surgery & Telemedicine, JIPMER, Pondicherry 605006, India.

E-mail: drchittoria@yahoo.com

Received on: 18-05-2024

Accepted on: 29-06-2024



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committee approval. Informed written consent was taken from the patient. 42 year old male Patient had electric burn injury wherein he accidentally came in contact with high voltage wire. (Fig. 1) Patient was admitted with the above symptoms and managed according to WHO burn protocol. He underwent Hydro-jet assisted debridement, regenerative therapies in the wound. Multiple Split skin graft were applied to the debrided wound on the right foot. We applied aloe-vera gel over the burn wound from day 1 of SSG and during every dressing change. (Fig. 2) Aloe-vera is available in gel based preparation and costs around 100 Indian rupees per 100 g gel. Aloe-vera is widely and easily available gel in Indian markets. It can also be made using Aloevera leaf and taking out the extract and crushing it. Then the juice is applied to the wound.



Fig. 1: Electric burn site post SSG



Fig. 2: Preparation and Application of Aloe-vera gel over burn wounds

RESULTS

Patient burn wounds healed completely by day 14. (Fig. 3) No adverse effects noted with aloe-vera. Wounds healed with less scarring. Patient discharged successfully.



Fig. 3: Healed burn wound post SSG at Day 14

DISCUSSION

Aloe-vera has been proven to suppress thromboxane, an inhibitor of wound healing, enhance wound healing, and decrease inflammation in both in vitro and in vivo experiments. The gel's

magnesium lactate can stop histamine from being produced, which stops skin irritation and itching.⁹ Additionally, it improves the production of cytokines and the immune system.

Through the suppression of IL-6 and IL-8, the reduction of leukocyte adhesion, the elevation of IL-10, and the lowering of TNF alpha, Aloe-vera effectively prevents inflammatory reactions. Due to the molecule glucomannan's abundance in polysaccharides like mannose, it has regenerating capabilities.³ Glucomannan boosts the activation and proliferation of fibroblast growth factor receptors, which in turn raises the production of collagen. Topical application of Aloe-vera to prevent ulcers and enhance the healing process of dermal injuries (e.g., burns, frostbite, skin infections, surgical wounds, inflammation, herpes ulcers, diabetic foot ulcers, pressure sores, and chronic wounds) has been reported. Burn wounds were the subject of the majority of investigations.

The traditional treatment for burns is Aloe-vera. Burn wound healing was examined in five studies. Aloe-vera outperformed silver sulfadiazine 1% ointment, petroleum jelly gauze dressing, and framycetin cream in these studies. Additionally, it sped up healing, avoided wound infection, and stopped itching and redness.⁴ In these investigations, first- and second-degree burn wounds responded better to Aloe-vera treatment than burn lesions of other degrees.

Aloe-vera, it has been found, can speed up the recovery of first- and second-degree burns by 9 days. Aloe-vera was used on postoperative wounds such as episiotomy, cesarean section, skin biopsy, hemorrhoidectomy, gynecologic laparotomy surgery, and graft. In these studies, the use of Aloe-vera gel and cream reduced the pain and recovery time compared to other conventional treatments.⁵ Aloe-vera was used for healing of cracked nipples in 2 studies and it reduced the pain and discharge in the area. Aloe-vera has been effective in chronic wounds such as pressure ulcers, diabetic ulcers,⁶ chronic anal fissure wounds, chronic wounds caused by accidents, psoriasis, and genital herpes. Aloe-vera was more effective compared to saline gauze dressing, phenytoin, and current treatments. Aloe-vera reduced the pain, bleeding, and recovery time in chronic wounds.

Aloe-vera has also been effective in the prevention of ulcers. Mucopolysaccharides along with amino acids and zinc available in Aloe-vera can lead to skin integrity, moisture retention, erythema reduction, and helps to prevent skin ulcers. Due to anti-inflammatory, increased immune activity,

anti-bacterial and anti-viral effects, and decreased histamine activity properties of Aloe-vera, it accelerates the healing process of burn wounds. The outcome of the present review study shows that Aloe-vera is unanimously considered as the ideal dressing.⁷ Most studies have been performed on grade 1 and 2 ulcers and there are limited studies on grade 3 ulcers. The latter could be due to full thickness skin loss in grade 3 wounds and possible onset of wound infection.

Aloe-vera (as a gel or cream) can be effective to treat chronic wounds such as psoriasis lesions (twice a day for 4-8 weeks), pressure ulcers (1-3 months), venous, diabetic and herpes ulcers and chronic anal fissure (2-3 weeks). Aloe-vera as a wound cover would keep the wound area moist and allows optimal migration of fibroblasts and epidermal. Aloe-vera (1 to 100 mg/kg) can improve wound healing.

CONCLUSION

Aloe-vera and its constituents have qualities that make it possible to preserve the integrity and moisture of skin. Aloe-vera is far more efficient and less expensive than the other treatments that are now accessible in terms of the quality and speed of wound healing. Aloe-vera plays a vital role in healing of burns wound with the added advantages like minimal adverse effects, affordable, easily available and clinically proven. It is locally available in all Indian homes and can be grown at homes. Therefore, we thoroughly recommend use of aloe-vera gel in management of electric burnspost Split skin graft application. No negative effects noted with aloe- vera.

Conflicts of interest: None

Authors' contributions: All authors made contributions to the article

Availability of data and materials: Not applicable

Financial support and sponsorship: None

Consent for publication: Not applicable

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