

Role of Cyclical Negative Pressure Wound Therapy in Scald Burn

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How to cite this article:

Venkatesh A., Ravi Kumar Chittoria, Jacob Antony/Role of Cyclical Negative Pressure Wound Therapy in Scald Burn /Indian J Trauma Emerg Pediatr.2023;15(2):55-57.

ABSTRACT

Aim of this case report is to assess role of negative pressure wound therapy in scalds to faster healing. Clinical examination of the extent of the burn was done. Standard management (antibiotics, Intravenous fluids, analgesics. Dressings, regenerative therapies, scar management) of the burns was done along with that autologous bone marrow aspirate. Autologous bone marrow aspirate is effective in preventing abnormal scarring. Negative pressure wound therapy may be used to promote faster wound healing.

Keywords: Negative pressure wound therapy; Cellophane; Burns.

INTRODUCTION

Wound healing in case scalds can be considered as a coordinated process involving complex mechanisms that proceeds in various stages from blood clotting to inflammation, cellular proliferation, angiogenesis, and reconstruction of extracellular matrix. Failure of any of these processes due to ischemia, reperfusion injury, bacterial infection, or aging can result in chronic

inflammation and a non-healing wound. In this article we discuss the role of negative pressure wound therapy in scalds to faster healing.

MATERIALS AND METHODS

The study is done in a tertiary care hospital in South India. The subject is a 1.5 years old female, with no comorbidities, with alleged history of accidental spill of hot milk over right side of chest right arm and forearm and sustained Accidental scald 2nd degree 14% TBSA involving head and neck on 23/03/23.

Patient was admitted in Burns ICU (JIPMER), managed with antibiotics, IV Fluids, analgesics. Dressings done, regenerative therapies done and scar management done. VSS score at the time of admission was 6/13.

2 Cyclical NPWT were given

Before discharging the patient wound healed well and Video-dermoscopy done and scar VSS score at the time of discharge is 3/13.

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Received on: 17.04.2023

Accepted on: 03.05.2023



Fig. 1: At the time of admission



Fig. 3: Healed burn wounds



Fig. 2: Bone marrow aspiration

DISCUSSION

In human cutaneous microcirculation, resting capillary pressure was reported in a range from 10.5 to 22.5 mmHg or even 41.0 mmHg.^{1,2} Thus, applied surface pressure of ~30.0 mmHg via a NPWT dressing could potentially result in an occlusion of cutaneous capillaries. Given the finding that capillary pressure also increases in response to a higher venous pressure, at least a sub-total occlusion of the dermal microvasculature

due to the intervention can be assumed.³ Overall, the mechanisms of cutaneous vascular response to certain stimuli are complex, especially concerning vasodilation and improvement of local flow.⁴ Repeated capillary (subtotal) occlusion represents a strong stimulus for the affected tissue. Both post-occlusive reactive hyperemia (PORHA) and increased mechano-humoral transduction to the vascular bed result in alterations of intravascular shear.^{5,6}

Duration of applied pressure, number of repeated cycles, and body site are important variables to optimize the conditioning effect on the improvement of remote microcirculation.

An ideal application of a NPWT dressing must respect the individual circumstances of each patient and treated wounds with respect to comorbidities, location of the wound, and tissue composition.⁷

CONCLUSION

Cyclic negative pressure wound therapy is useful in scalds.

Conflicts of Interest

This study does not require any institutional approval.

Declarations

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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