Management of burns by Negative pressure wound therapy

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Abstract

Negative pressure wound treatment (NPWT) is an accessible-cell gel covering that is wrapped with an elastic adhesive tape fabric. NPWT is used for suction treatment (negative pressure) to facilitate tissue repair and to extract fluids such as wound granulation tissue, drainage fluids, body fluids or contagious materials. Topical negative pressure (TNP) and Gauze-based negative pressure wound therapy are types of Negative pressure wound treatment. In these review, brief details about the Negative pressure wound treatment will be discussed

Keywords

Negative pressure wound treatment, Topical negative pressure, Gauze-based negative pressure wound therapy, wounds, fabric, tissue repairs

Introduction

Accurate representation of burn complexity upon admission is significant in making dressing and operation judgements. The burn wound is a fluid living environment that will change reliant on both intrinsic and extrinsic factors. Hence, it is vital to monitor the wound before healing at steady breaks [1-6]. Burn injury treatment has always been the responsibility of burn practitioners. Local and systematic treatments for burning wound dressing and prevention of burn scars have been recommended since ancient times. [2,7-12]

Taxonomies of burns

Burns are categorized as 1st 2nd and 3rd degree and 4th degree in some cases, depending upon the condition and depth of severity permeates the surface of the skin.[4,7,11,13-19]

- 1st degree burns:- it involve only the superficial layer epidermis, the front layer of the skin. The location of the wound or injury is warm, sore, swollen and without blisters. Symptoms include slight sunburn. Long-term damage to tissue is uncommon and often includes an ↑ or ↓ in skin colour.
- 2nd degree burns:- it include an first layer of skin epidermis and a part of the lower skin layer, the dermis. The source of burning looks dark, bubbled, and can be swollen and throbbing.
- 3rd degree burns:- The epidermis and dermis are burned by third degree burns. We may go into the subcutaneous tissue, the innermost layer of skin. The burning site can appear white or blacked and charred.
- 4th degree burns:- 4th grade burns go through all layers of the skin and superficial tissue and deeper tissue, possibly involving muscle and bone. Since the nerve endings are damaged, there is no sensation within the field.[20-23]
Negative pressure wound therapy (NPWT)
It is defined as being used for treating a victim of infant burning. Negative pressure wound therapy (NPWT), also recognized as vacuum assisted closure (VAC), is a medical procedure that uses a vacuum pump, tubing, and dressing to remove any excess exudate and reduce inflammation of acute or chronic wounds and second and third degree burns. NPWT has become a cornerstone of subordinate extremity soft tissue pathology treatment, particularly in patients with acute, postoperative, and peripheral vascular disease linked chronic wounds. NPWT is a altered wound dressing in which a spongy pad (generally gauze or froth) is inserted inside the wound bed and sealed to create an extra layer of protection using polyurethane films. Negative pressure wound treatment in infected wounds has also been documented to reduce the bioburden faster than customary wet-to-dry bandages [5, 8,23-2]. Lymphatic drainage is encouraged by gradually increasing the lymphatic density at the edges of the bite.

Topical negative pressure (TNP)
Topical negative pressure (TNP) treatment is an anti-invasive procedure used to treat acute, subacute, or chronic wounds with negative pressure. It is well known the principle of using -ve force to create a pull force that would allow the effluent of surgical wounds to facilitate lesion restorative. Applying the treatment for TNP or vacuum-assisted closure (VAC) system has shown increased graft take. TNP treatment is a customized dressing composed of exposed-cell foam and pull tubing with an occlusive dressing that is applied to the wound. TNP exerts a managed negative pressure on the surface of a wound which has potential benefits for treating and maintaining wound. The VAC systems use triple types of foam. The most widely used foam is Ether and Ester-Based Polyurethane is used in these systems. Natural polyvinyl alcohol foam has very small pores and is used without inducing micro-deformation to protect critical structures [8, 13, 17, 23, 30-38]

Gauze-based negative pressure wound therapy
Gauze-based NPWT could be a valuable complement to the fruitful integration of a STSG into the receiver wound bed, in relationships of wound bed research and strengthening of the split-thickness skin graft (STSG) [17-19]. Gauze is easy to spread over and multifaceted wound geometries are forgiven so it could be a perfect substance in this instance. In a retrospective, non-comparative clinical study, we required to evaluate the efficacy of the gauze-based NPWT method as an ancillary remedy in skin grafting techniques. Specifically, we assessed the impact on wound location, size, and volume and determined the take output. [7-14, 39-50]

Conclusion
As an adjunctive therapy, NPWT may have proven effective in an extensive array of wounds. Nevertheless, the systems presently available are static new, and there is a shortage of the quantity of great-level clinical studies researching NPWT. Further RCTs are required to interpret the specifics of NPWT's efficiency, especially in relations of its abundant indications and modalities. Generally, NPWT remains to maintain great potential and this treatment method aims to continue to progress wound healing and patient carefulness with further work into the optimal parameters of its implementation.
References


