

# Topical application in Polyhexanide and Hydrogel dressing of bacteriophages for treatment of wound infections: Case Study

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## Abstract

**Introduction:** Wound infections related to multidrug-resistant (MDR) bacteria are one among the important threats to public health. The standard treatment for wound infected is building on these principles, the pillars of treatment today include the following: local wound care with surgical debridement, dressings promoting a moist wound environment and treatment of active infection. This paper reviews the applying of polyhexanide (Prontosan<sup>®</sup> solution) for wound bed preparation and hydrogel (ProntosanGelX<sup>®</sup>) dressing for management and promotion wound healing.

**Purpose:** The study of effectiveness in Polyhexanide and Hydrogel dressing of bacteriophages for treatment of wound infections.

**Case Study:** Patient demographics, This 31 year – old, heavy smoke, Post-traumatic motorcycle accident with head injury 7 day. He has right site of head erythema, swelling, and local heat for several weeks with gangrene change of surrounding tissue. He came to our OPD for help on 23 Nov 2019. Lab data showed leukocytosis (WBC: 19,800/ul). We then arranged admission for surgical debridement and antibiotics surgical details and complications were recorded using information gathered from the medical records. Indications for dermal matrix use were grouped into the following categories: covering wounds with exposed skull bone, Complications were grouped into the following categories: infection, non-adherence and incomplete vascularization. it was determined that formal ethics approval was not required for a retrospective study of this nature. Written patient consent was gained for the use of clinical photographs.

**Intervention:** The wound size after debridement was 7.0x4.5x2.5 cms. Right site of head skull bone exposure was noted. After several days (5-day Post-op) of wet dressing by Silver Sulfadiazine and normal saline, the wound bed delayed healing and increasing necrotic and gray slough tissue typed. We would like apply BWAT Scale in order to evaluate successfulness for wound assessment (score = 42). We then applied polyhexanide (Prontosan<sup>®</sup> solution) for wound bed preparation, clean and managing biofilm and hydrogel (ProntosanGelX<sup>®</sup>) dressing for promotion wound healing.

**Concluding:** The granulation tissue grew gradually of wound increased after we used polyhexanide (Prontosan<sup>®</sup> solution) and hydrogel (ProntosanGelX<sup>®</sup>) as wound dressing. Twice a week later, the skull bone exposure area decrease and the wound size became smaller (score = 29). The wound complete healed after 4 weeks. We conclude topical application in Polyhexanide and Hydrogel dressing of bacteriophages for treatment of wound infections. Even though, a topical application dressing for treatment of wound infections but this study only one case. Despite this, a number of preclinical and clinical cases, and clinical trials using phage products delivered topically have been more recently reported. Preclinical studies reported therapeutic utility of topically applied phages in treating acute and chronic infections.

## Reference:

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