



COMPARATIVE STUDY OF PLACENTREX GEL DRESSING'S VS AMORPHOUS HYDROGEL WITH COLLOIDAL SILVER IN CHRONIC CLEAN WOUNDS

General Surgery

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ABSTRACT

Background: The process of cutaneous wound healing is incredibly complex, dependent on an intricate interplay between number of highly regulated factors working in concert to restore injured skin towards repaired barrier function. Any surgical practice primarily depends upon the healing of wounds without serious complications and infection occurring. It accounts for considerable patient morbidity, discomfort and prolonged hospitalization. **Objective:** To compare between the use of Placentrex gel dressings vs Amorphous Hydrogel with colloidal silver in Patients who having chronic clean wounds. **Methodology:** This comparative study was conducted among 140 patients with chronic clean wounds came getting admitted in the department of General Surgery, AVMC with Informed consent were included in the study. Placentrex gel dressing and Amorphous Hydrogel with colloidal silver dressing's was done. Patients were monitored daily and Data was calculated and analysed by using SPSS version 22.0 (IBM SPSS, US) software operating on windows 10. **Result:** Total of 140 patients included in the study and divided into two groups of 70 based on the type of dressings done for the Patients. Found significant lower duration of the hospitalization and cost for the Patients who received Placentrex gel compared to Amorphous hydrogel with colloidal silver. Number of dressings needed for Patients who received placentrex is less compared with Amorphous hydrogel with colloidal silver. The patients who given placentrex gel were found to have Significantly fast wound healing 20 vs 30 days ($P < 0.005$). **Conclusion:** Placentrex gel is more effective in wound healing than hydrogel and the duration of hospital stay is decreased for patients who have chronic wounds. This study results found that placentrex gel is more effective against acute and chronic clean wounds.

KEYWORDS

Wound, Placentrex gel, Hydrogel, Chronic clean wounds, Duration of healing.

INTRODUCTION

Skin being the largest organ of the human body has a critical structure that covers internal tissues from mechanical damage, microbial infection, ultraviolet radiation and extreme temperature^[1]. It is highly susceptible to injury with significant impact to healthcare, economy and patients. Patients with health complications like diabetes and other genetic disorders like sickle cell anaemia are especially have delayed wound healing with long-term sequela. Though various therapies aim at wound healing, only few are effective and there is always a need to explore modern therapies that are effective for wound healing^[2].

Sequential synchronization of various cell types are essential for skin repair. For instance, the outer epidermal layer withstands to harsh environment conditions and contains sebaceous glands, sweat glands and hair follicles. The dermal layer which is rich in extracellular matrix with vasculature and mechanoreceptors provide strength, nutrients and immunity to the skin. Next to it the subcutaneous adipose tissue underlines the dermal layer and functions as energy reserve. In addition to all these cell types, each layer has resident immune cells that are constantly surveying the skin for damage^[3].

At the end of inflammatory phase, angiogenesis occurs that involves endothelial cell proliferation, migration and branching to form new blood vessels. Pericytes in the basal lamina are activated and scaffold structural integrity to the endothelial cells. In addition to all these, progenitor cells from the bone marrow are found to support new blood vessel formation during the process of wound healing. New blood vessel formation involves various cell types with most of the cellular diversity occurring within the perivascular space^[4].

MATERIAL AND METHODS

This study was conducted at AVMC, Puducherry in the department of General Surgery from November 2020 to October 2022. After getting Institutional Ethical committee clearance, the study was conducted by

obtaining proper informed consent from the study participants.

All the patients above the age of 18 yrs who are getting admitted in the hospital with the diagnosis of chronic clean wounds were included in the study. A study of 140 cases were considered by obtaining informed consent from the patients. Pregnant women and Immunodeficiency Patients were excluded from the study.

Sample Collection

The sample size 140 (70 in each group) was calculated based on statistical formula for comparisons of two independent means, with the expected mean reduction in duration of hospital stay between the group as 20 and the standard deviation of 36. The level of significance and power as 5% and 90% respectively.

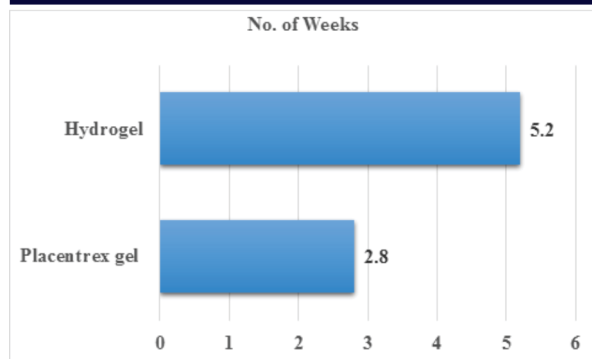
Statistical Analysis

All the data were collected in proforma and entered in excel sheet. The collected data demographic data was summarized as frequency, percentage, mean and standard deviation. The summarised data were represented using tables, figures, bar diagram and pie charts.

The mean difference between the continuous data was analysed using t-test, for follow-up data paired t-test and for categorical data Chi-square test was used to determine the significance between the parameters observed in this study. A $P < 0.05$ was accepted as significant. Statistical analysis was performed using SPSS version 22.0 (IBM SPSS, US) software operating on windows 10.

RESULTS

In the present study, the sample population was divided as per the treatment and they are grouped as per the age and are tabulated in the table below. The majority of the participants belonged to the age group of 56-65 years and the lowest number of participants were seen in age group of 18-35 in the present study.



Showing healing time in both the treatments

It was found that the patients treated with placentrex had faster healing time than the patients treated with amorphous hydrogel. Placentrex is known to exhibit higher efficacy in healing than hydrogel, with less healing time i.e; 2.8 weeks that stands as important finding of the study.

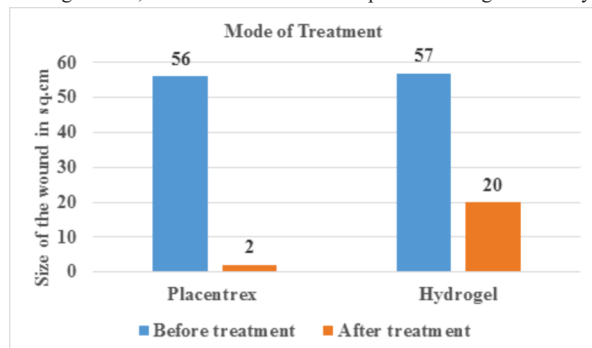


Figure 2: Size of the wound before and after treatment with placentrex and hydrogel

Both the group individuals were assessed for all the parameters of wound healing. To our surprise in the present study, the size of the wound is decreased effectively after treatment with placentrex than hydrogel that indicates effectiveness of placentrex. The size of the wound after treatment with placentrex was found to be 2 sq.cm whereas with hydrogel it was found to be 20 sq.cm.

After the wound treatment with both the different dressing material, it was concluded that the mean hospital stay was less in group A individuals who received treatment with placentrex gel than group B individuals who received hydrogel.

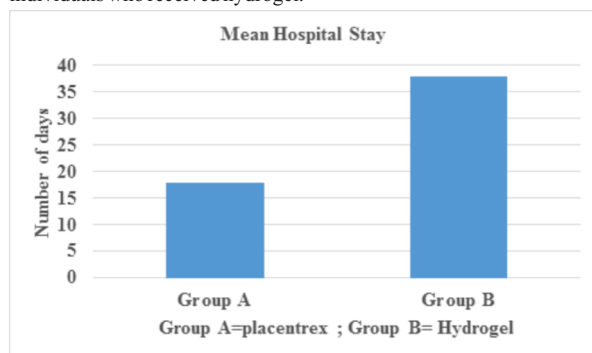


Figure 3: Duration in hospital stay

DISCUSSION

The aetiology and anatomical location of the wound varies in different ways based on its type (acute/chronic). A wound can be a breakdown of normal functioning of skin with or without loss of underlying connective tissue followed by injury to skin or tissues and organs as a result of ulcers. The normal physiological process of wound repair is challenged by the principle of moist wound healing, formation of scab seen by dry healing. It is observed that epithelialisation happens at twice in moist occlusive semi-occlusive environments than compared to dry one.

Wound healing with moisture is achieved by advanced wound care

dressings, a moist environment can be deleterious as it can lead to tissue breakdown and maceration. Moist wound healing is not appropriate for all wounds. Due to neuropathy and ischemia the necrotic digits should be kept dry or monitored very closely. Fighting infection problems are experienced by patients. Modern wound dressings should be used and the wound needs to be observed to evaluate early signs of clinical infection and prevent maceration.

During the administration of the placentrex gel there was no observed pain or irritation surrounding the skin. There were no blisters, itching or rashes or allergic manifestation developed in patients treated with placentrex gel. The observations showed no electrolyte imbalance or non-toxic. Placentrex Gel dressing was easy to administer and did not stain to the clothing and resistant strains did not progress following its use. It behaved synergistically with antibiotics. It assisted healing faster without causing intercession to granulation tissue.

A Similar study was done by Patil and Saumandal observed that the Placentrex Gel was found to be very much effective and outstanding stimulant of granulation tissue in infected wound succeeding emergency LSCS, laparotomy wound and bedsores in contrast to dressing with povidone iodine.⁵² A close study of 2 topical agents Placentrex Gel and Betadine saline dressing on non-healing wounds in lower extremities, the study done by Chauhan, it was observed that patients experiencing active topical treatment responded outstanding in Placentrex Gel dressing in contrast with control group.⁵³ Placentrex Gel has advantageous role as a topical agent in care of chronic non-healing wounds.

CONCLUSION

Placentrex gel is effective in wound healing than hydrogel and the duration of hospital stay is lessened for patients who have chronic wounds. This study results found that placentrex gels more are effective against acute and chronic wounds.

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