

To Compare the Role of Topical Platelet Administration with Normal Saline Dressing (NS) in Chronic Diseases

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Abstract

Background: The ulcer is deemed chronic if it lasts for longer than 6 weeks. It has a significant effect on the quality of life. They can cause substantial morbidity and injury and their propensity for causing extreme physical or psychological trauma for patients is generally underestimated. The objective is to the aim of the study was to compare the role of topical platelet administration with normal saline dressing in chronic ulcers. Design: This was a Randomized Controlled study. Duration: One year i.e. 2017 to 2018. Participants: The study included 80 patients comprising men and women with non-healing ulcer diagnosis who were admitted for intervention in the surgery department of Mahatma Gandhi Memorial Hospital. **Subjects and Methods:** Two random groups, Group A and Group B, comprising of 40 patients each group. Comprehensive history and clinical evaluation were conducted in both groups and all details were collected. The original condition of the ulcer has been identified and appropriate wound debrided in both groups, if necessary. The dressing and examination of the patients is preceded by observations. Data was recorded almost every 5th day from the date of entry to 10th day. The effectiveness measurement was dependent upon the size of the ulcer as well as the presence of epithelization at the wound area. **Results:** group A patients showed wound area contraction rate of 1.8 mm² per day. Group B patients showed wound area contraction rate of 0.8mm²per day. P value for wound contraction rate was less than 0.001. In group A epithelization was noted between 5th day and 10th day and mean period was 6.2 days. In group B epithelization was noted between 5th day and 10th day and mean period was 8.5 days. **Conclusion :** It can be concluded that PRP dressing can be used as a safe adjunct in wound healing.

Keywords: Epithelization, Wound Healing, Platelet Dressing.

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Introduction

The ulcer is deemed chronic if it lasts for longer than 6 weeks. It has a significant effect on the quality of life. They can cause substantial morbidity and injury and their propensity for causing extreme physical or psychological trauma for patients is generally underestimated.^[1]

Most of the therapeutic approaches dealing with the root cause are accessible. However, the care and the steps the patient should take to avoid the recurrence of the infection should also be counselled.^[2]

As this is a chronic disease, the ulcer is deprived of all the growth factors and nutrients deemed necessary for healing. This may be one cause of the ulcer's prolonged healing time.^[3]

Dressings are an integral aspect of treating these ulcers. Moist occlusive dressing may presumed to enhance healing of the wound. Platelet concentrates also tend to heal more

efficiently by the provision of the ulcer's important growth factor and nutrients. Many platelets are available with rich concentrations, and each form of concentrate has its own medical applications.^[4]

Products derived from blood often used to seal and treat wounds and ulcers began about five decades ago. The Platelet Rich Fibrin was the concentrate being used for ulcers. The efficacy of blood products in wound healing was first described by Whiteman et al,^[5] after which the utilization of such products has become increasingly widespread over the last fifteen years.

Subjects and Methods

Place of Study : Mahatma Gandhi Memorial Hospital and KAPV Government Medical College and Hospital, Tiruchirapalli.

Type of Study : This was a Randomized Controlled study.

Sample Collection : Sample Size 80 Patients

Sampling Methods : Consecutive sampling.

Inclusion Criteria

1. At least one cutaneous, non-healing wound of 3 weeks duration.
2. Age group: 30 – 60 years.
3. Wegner’s Grade I and II

Exclusion Criteria

1. Wound caused by burns, irradiation or malignancy.
2. Uncontrolled co-morbidities.
3. Wound area > 100 cm² area.
4. Wound with local or systemic infection – WBC > 15000 cells/mm³, Temperature > 37.5° C, Erythema.

Ethical Approval: Approval was taken from the Institutional Ethics Committee before start of the study.

Statistical Analysis : Data was generated in the form of statistical tables. For statistical analysis, version 20 of the SPSS software has been used.

Results

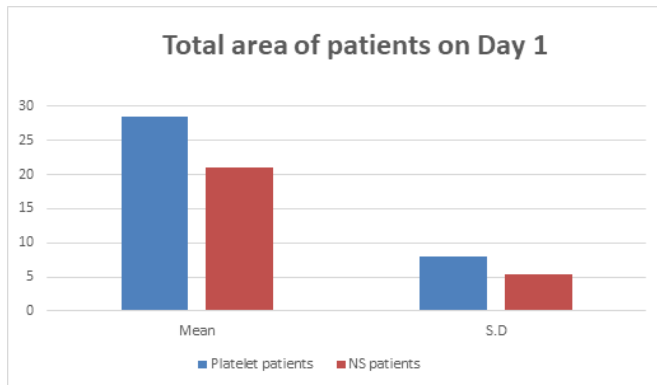


Figure 1: Total area of patients on Day 1. Total area of Platelets patients: 28.486 mm². Total area of NS Patients: 21.067 mm²

Discussion

Chronic wounds affect a considerable percentage of the population and lead to a major burden in the hospital setting. Few patients are at high risk for sustaining non-healing wounds, including those with compromised arterial or venous

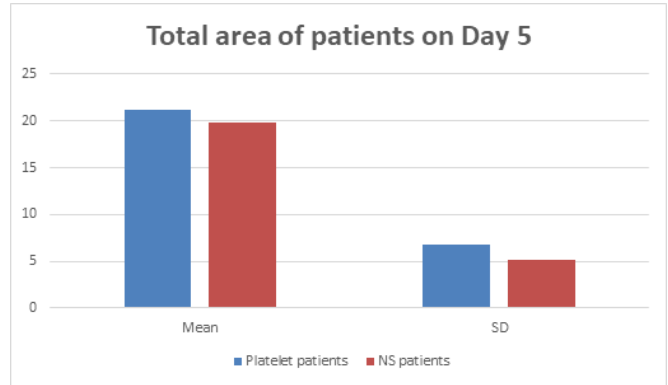


Figure 2: Total area of patients on Day 5. Total area of Platelets patients: 21.228 mm². Total area of NS Patients: 19.78 mm²

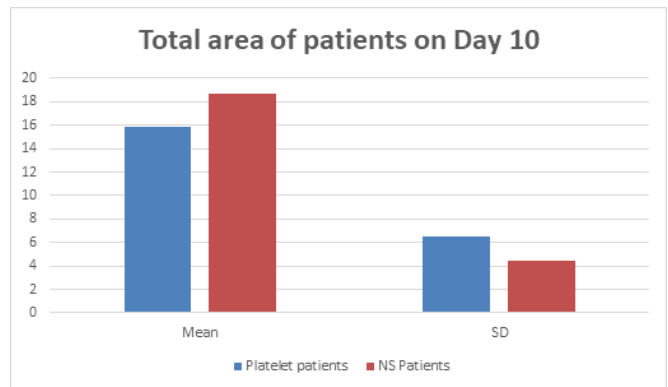


Figure 3: Total area of patients on Day 10. Total area of Platelets patients: 15.89 mm². Total area of NS Patients: 18.33 mm²

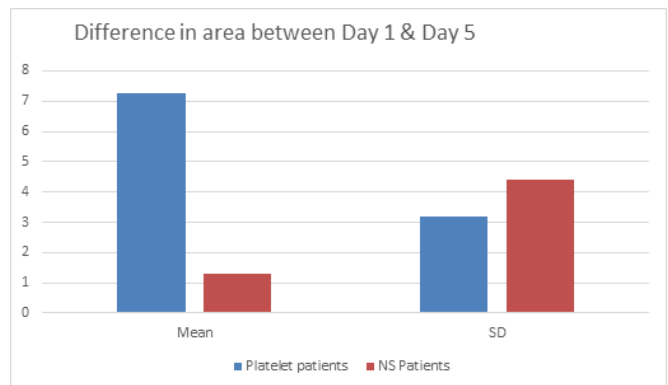


Figure 4: Difference in area between Day 1 and Day 5. Difference in area of Platelets patients: 7.258 mm². Difference in area of NS Patients: 3.20 mm²

Table 1: Sex distribution

S.No	Sex	Group A	Group B	Total
1.	Male	28 – 70%	23 – 57.5%	51- 63.8%
2.	Female	12 – 30%	17 – 42.5%	29 – 36.35

Table 2: Age Distribution

S.No	Age groups	Group 1	Group 2	Total
1.	31 - 40	3	7	8.8%
2.	41 - 50	18	36	45%
3.	51 - 60	16	25	31.3%
4.	61 - 70	3	12	15%

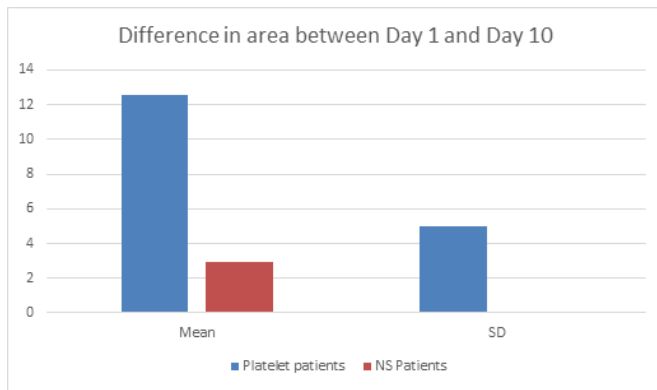


Figure 5: Difference in area between Day 1 and Day 10. Difference in area of Platelets patients: 12.58 mm². Difference in area of NS Patients: 2.93 mm²

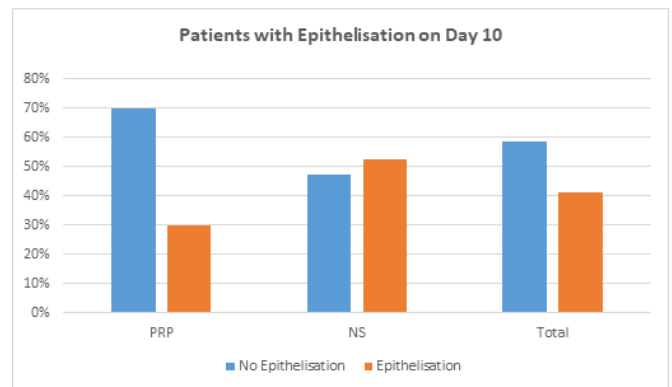


Figure 7: Patients with Epithelisation on Day 10. Total: 47. Total Platelet: 28. Total NS: 19.

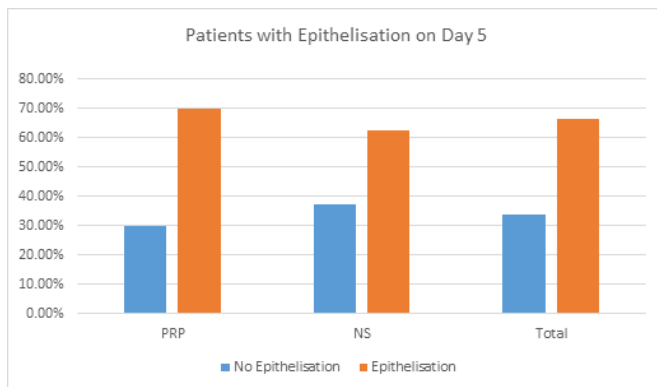


Figure 6: Patients with Epithelisation on Day 5. Total: 27. Total Platelet: 12. Total NS: 15.

drainage, immune deficiencies, elderly patients with diabetes, and some patients with neuropathy or spinal cord injuries. Beyond the most prominent non-healing wounds involving the lower limbs associated with diabetes, peripheral artery diseases and chronic venous insufficiency.^[6,7]

Chronic non-healing ulcers are difficult to treat and impact patients and their families' quality of life. The magnitude of complications and suffering endured by the patient during their phase of the illness is immense. Various techniques have been used to improve wound healing. Platelet topical application may be used as an alternative to promote wound healing. It aids in wound healing by reducing the duration of wound healing and promoting early epithelization. It has an analgesic effect, too. In the current study, 40 patients in the research group reported mean wound contraction rate of 1.8 mm/day. None of the patients in the research group seemed to have any complications due to Platelet dressings.^[8]

Platelet dressing helps in wound healing by decreasing the time taken for wound contraction, and early epithelialization. Platelet dressing can be used as an adjunct to conventional

treatment in treatment of ulcers. Patients treated with Platelet dressing did not develop any complications during the study period and hence can be safely used. Hence it is proved that PRP dressing can be used as a safe adjunct in wound healing.^[9]

Adequate debridement and proper dressing with anti-septic solutions and topical applications to promote wound healing has been used to treat non-healing ulcers. There is a constant quest for an optimal way of speeding wound healing that doesn't have adverse effects on the patient. Platelet dressing should be used as an adjuvant treatment to speed up wound healing in patients undergoing traditional treatment.^[10]

Two random groups, Group A who received platelet dressing and Group B with Normal Saline dressing, comprising of 40 patients each group. The original condition of the ulcer has been identified and appropriate wound debrided in both groups, if necessary. The dressing and examination of the patients is preceded by observations. Data was recorded almost every 5th day from the date of entry to 10th day. The effectiveness measurement was dependent upon the size of the ulcer as well as the presence of epithelization at the wound area.

Conclusion

Platelet dressing helps in wound healing by decreasing the time taken for wound contraction, and early epithelialization. Platelet dressing can be used as an adjunct to conventional treatment in treatment of ulcers. Patients treated with Platelet dressing did not develop any complications during the study period and hence can be safely used. Hence it is proved that PRP dressing can be used as a safe adjunct in wound healing.

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