



“A Comparative Study of Platelet Rich Plasma Dressing and Normal Saline Dressing in Ulcer Healing”

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KEYWORDS

PRP dressing,
complete healing,
NS dressing.

ABSTRACT:

Background: Wound healing is a dynamic process involving tissue repair. It is broadly considered to have significant tissue formation and remodelling. PRP is an autologous concentrate of human platelets and has granules which release the proteins, chemokines and cytokines required for the tissue repair process, mimicking and aiding in the ongoing process of wound healing at the ulcer site. Therefore, the present study was conducted to compare the efficacy of Platelet rich plasma dressing with Normal Saline dressing in wound healing in cases of ulcer.

Method: A total of 62 patients having ulcers and meeting the inclusion and exclusion criteria were included after obtaining written informed voluntary consent from the patients. They were randomized into two Groups of 31 cases each: Group PRP and Group NS. Demographic details, details of past and personal histories along with ulcer sizes and durations were recorded. Findings of general and systemic examinations were noted. Routine laboratory investigations were done. The dressing was done as per the assigned Group, with either PRP or NS. Duration for complete healing was recorded and compared in both the groups.

Results: The two groups were similar in terms of demographic variables. The distribution of duration of ulcer and type of ulcer were similar in the two groups (P value: more than 0.05).

Conclusion: It may be effectively concluded that PRP dressing has faster and complete healing as compared to NS dressing.

INTRODUCTION

An ulcer is a discontinuity of an epithelial surface, characterised by destruction of the surface epithelium and a granulating base. Management of Ulcers can be conservative or surgical depending on the cause. Conservative management includes antibiotics, dressings, nutritional support whereas surgically they can be managed by debridement, skin grafting and flaps. Apart from the conventional dressing method, honey-soaked dressing, hydrogel dressing and some new methods are emerging such as cellular therapies which include platelet rich plasma (PRP) which is a collagen based wound dressing. (2)

Platelets release certain growth factors from alpha granules, which are located in the thrombocyte cell

membrane which include Platelet derived growth factor (PDGF), epidermal growth factor (EGF), platelet derived angiogenesis factor and platelet factor 4. These factors act locally on the wound and hasten the healing process. (3)

The purpose of this study is to compare the efficacy of platelet rich plasma dressing with normal saline dressing in ulcer healing.

MATERIALS AND METHOD

This randomized controlled interventional study was conducted under the Department of Surgery, MGM Medical College and Hospital, Kamothe, Navi Mumbai, from March 2022 to August 2024, following approval from the Institutional Ethics Committee.



A total of 62 patients of either gender of age between 18-80yrs giving consent for undergoing PRP and NS dressing were included in the study. Patients with platelet count $<100 \times 10^9 / L$ or not giving consent for taking part in the study were excluded. A written informed consent was obtained from all the patients. In patients presenting with an ulcer, after initial evaluation and investigations the wound was debrided. After taking consent, patient was given chit block to select the medium of dressing.

Demographic details of the patients were recorded. History of present illness and detailed past and personal

histories were noted. According to the choice of dressing either platelet rich plasma or normal saline dressing was done. The size and site of the ulcer was noted. The size of the ulcer and appearance of granulation tissue was noted every 4th day in both the groups.

The patients were randomized into two Groups: Group A (PRP Dressing) and Group B (NS dressing). The patients were followed up for a period of 6 weeks by a single person. The time taken for complete healing was recorded in both the groups. All the data was entered in excel and analysed.

RESULTS

Table 1: Distribution of the study population in the two groups according to the type of ulcer during patient selection

TYPE OF ULCER	PRP		NS	
	N	%	N	%
POST AMPUTATION ULCER	2	6.45%	6	19.35%
HEALING	3	9.68%	4	12.91%
NON-HEALING	10	32.26%	11	35.48%
PRESSURE	5	16.13%	3	9.68%
TRAUMATIC	11	35.48%	7	22.58%
TOTAL	31	100%	31	100%
P VALUE	0.466			
SIGNIFICANCE	Not significant			

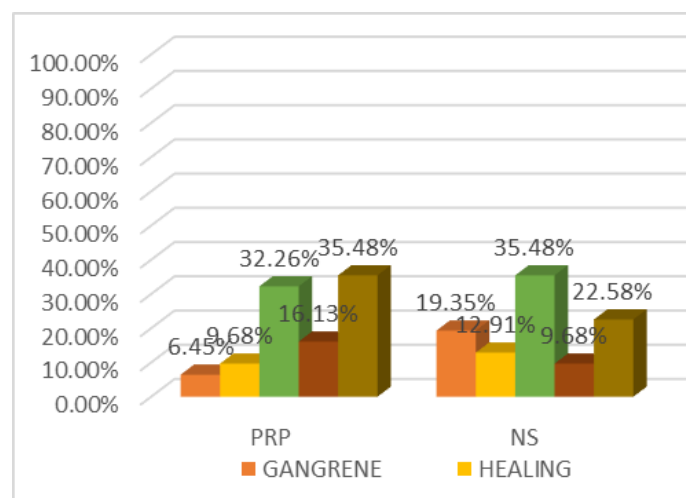


Table 2: Distribution of the study population in the two groups according to the duration of ulcer



DURATION OF ULCER	PRP		NS	
	MEAN	SD	MEAN	SD
DURATION (in days)	13.77	7.38	11.42	7.45
P VALUE	0.216			
SIGNIFICANCE	Not significant			

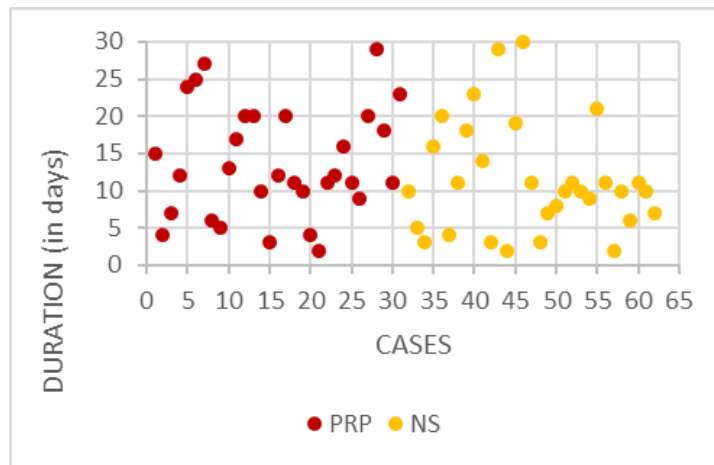
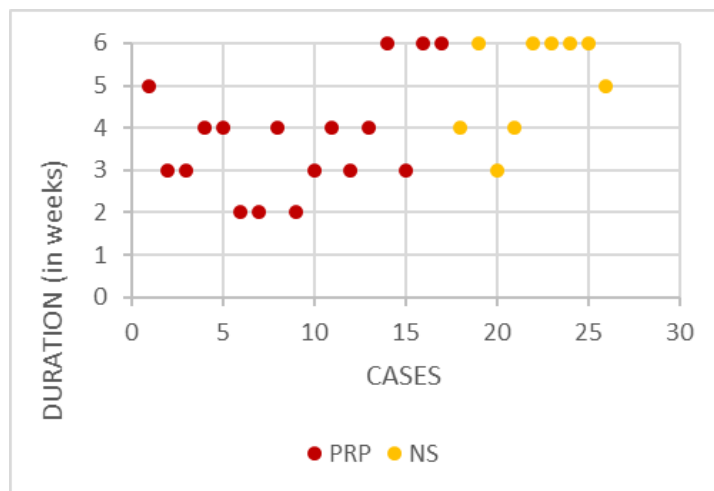


Table 3: Distribution of the study population in the two groups according to the time taken for complete healing.

TIME TO HEALING	PRP		NS	
	MEAN	SD	MEAN	SD
DURATION (in weeks)	3.76	1.35	5.11	1.17
N	17		9	
P VALUE	0.018*			
SIGNIFICANCE	Significant			





DISCUSSION

The PRP is an autologous concentration of human platelets that is 3 to 5 times greater than physiologic concentration of thrombocytes in whole blood.[123] The PRP represents a relatively new approach in regenerative medicine. Therefore, the present study was conducted to compare the results of PRP with that of NS.

In the present study, it was observed that the epithelization was observed in 54.84% cases in the PRP group as compared to only 29.03% cases in the NS group; P value: 0.045. The rate of epithelization was faster in PRP Group (3.76 ± 1.35 weeks) as compared to the NS group (5.11 ± 1.17 weeks); P value: 0.018.

Thus, addition of PRP in the treatment regimen accelerates and improves the wound healing in all kinds of ulcers. It has been hypothesized that PRP may facilitate and stimulate local release of cytokines and growth factors which in turn lead to the induction of the various cells involved in wound healing thereby accelerating the process.

Limitations: The number of patients included in study was limited, it was a single centre, single person study .A Study with a large number of patients done at multiple centres by different people may give a more

reliable result . Therefore, the results cannot be generalized.

CONCLUSION

PRP dressing had a completely healed wound when compared to NS Dressing Group (54.84% vs 29.03%, respectively; P value: 0.045). The time taken for healing was less in PRP Group when compared to NS Group (2.21 ± 1.05 weeks vs 4.64 ± 3.36 weeks, respectively; P value: 0.004).

Thus, it can be effectively concluded that PRP is a better agent compared to Normal saline for dressing in ulcers for significantly faster and better healing

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