



## ROLE OF TOPICAL PLATELET RICH PLASMA IN MANAGEMENT OF CHRONIC ULCERS

**Mahalakshmi Ashok kumar**

Assistant professor, K.A.P.V Government Medical College, Trichy

**Yeganathan Rajappan\***

Associate professor, K.A.P.V Government Medical College, Trichy \*Corresponding Author

**Manimaran Thangavelu**

Assistant professor, K.A.P.V Government Medical College, Trichy

**Rajeswari Appanamuthu mari**

junior Resident, K.A.P.V Government Medical College, Trichy

### ABSTRACT

**INTRODUCTION:** Wound healing depends on various factors such as on. Platelet derived growth factors(PDGF) are biologically active substances that serve as messengers to regulate a well orchestrated and complex series of events involving cell to cell and cell to matrix interactions.(1)And so Therefore Local application of PDGF that stimulate wound repair was an appealing proportion. The purpose of this prospective randomized study was to investigate the efficacy and safety of topical platelet rich plasma in management of patients with chronic ulcers(2).

**MATERIALS AND METHODS:** Patients enrolled by simple randomization to participate in study and divided in to two groups. Group A with platelet rich plasma dressing and Group B with regular normal saline dressing. Platelet rich plasma is prepared by double centrifugation method from whole blood. Platelet pellets are formed at the end of this method. Pellets along with plasma used for dressing.

**RESULTS:** The wound was assessed before start of treatment and after 5th and 10th day of treatment. The size and epithelization were used to evaluate the healing process.

**CONCLUSION:** Platelet rich plasma dressing helps in accelerated wounds contraction and early epithelization without any side effects. hence platelet rich plasma dressing can be used as an adjunct to conventional treatment.

**KEYWORDS :** Platelet Rich Plasma, Wounds

### INTRODUCTION:

Chronic Wounds affect a substantial proportion of the population and contribute to a significant burden in hospital setting(3). Certain patients are at risk for development of a non healing wound such as those with impaired arterial or venous circulation, Immune compromised states, the elderly, those with diabetes, and with neuropathy or spinal lord injury. The most common non healing wounds affecting the lower extremities are associated with peripheral artery disease, diabetes and chronic venous insufficiency(4).

Non healing ulcers are managed by adequate debridement and suitable dressing with antiseptic solutions and topical applications which enhance wound healing. There is a continuous search for ideal method to accelerate wound healing which does not have any ill effects on an patient. Platelet rich plasma dressing can be used as an adjuvant therapy in patients receiving conventional therapy in order to accelerate wound healing. (5)

80 patients including both males and Females with a diagnosis of non healing ulcer ere admitted under surgery department of MGMGH, Trichy. Patients were randomized into two groups group A Platelet rich plasma dressing and Group B (NS Dressing) Their wound condition at the time of presentation was assessed, patients in both the groups underwent debridement if necessary. Patients in Group A received Prp Dressing once in five days.

### MATERIALS AND METHODS:

This study was conducted in 80 patients, whom were randomly divided into two groups Group A (platelet rich plasma Dressing) and Group B (NS dressing) with 40 patients in each groups. In all cases, a detailed history and clinical examination was done by me and data was recorded as per protocol after getting informed and written consent.

The initial dimension of the ulcer was recorded and adequate in patients of both the groups. Platelet rich plasma prepared from whole blood by double centrifugation method. Platelet pellets sediment at the end of second centrifugation along with plasma are used with normal saline dressing in group A patients.

Observations were made during dressing of the patients. And data was

recorded on 5<sup>th</sup> day and 10<sup>th</sup> day from start of treatment. the efficacy evaluation was based on rate of decrease in size of the ulcer and appearance epithelization.

The size of ulcer was calculated by measuring vertical and horizontal diameters of ulcer using sterile thread and thereby using in on a tape.

The appearance of bluish rim of tissue in the periphery of the ulcer was taken as the appearance point of epithelization.

**TABLE 1**

**Demographic Data of Study**

	Group A	Group B
Males	28	23
Females	12	17
Diabetics	28	21
Hypertensive's	12	17
Dyslipidemics	13	11
Smokers	8	7
Alcoholics	10	15

**TABLE 2**

Result of Study		Group A	Group B	
1.	Size of ulcer	Before	28.4mm <sup>2</sup>	15.8mm <sup>2</sup>
		After	21.06mm <sup>2</sup>	18.13mm <sup>2</sup>
2.	Wound contraction rate	1.8mm <sup>2</sup> / day	0.7mm <sup>2</sup> / day	
3.	Average time of epithelization	6.2 dayas	8.5days	

### DISCUSSION:

Wound Healing is a complex biological process that involves chemo taxis and neovascularization that comprises synthesis of extra cellular matrix proton, components and remodeling of tissues. (6)And also there may be superimposing by bacterial contamination that causes unfavorable effects on wounds.(7) Thus many studies have reported on efforts andproducts to improve wound healing rates in management of these type of wounds which may in turn reduce complications.(8)

Present study showed, statistically significant improvement in both

area and epithelization of chronic ulcers due to platelet rich plasma in wound healing.(9)

Experimental researches on animals in past shows that signaling pathways are upregulated in the wounded skin of patients with chronic ulcers resulting in acceleration of wound healing in association with a recovery in the proteins of the pre signaling pathways(10).

Novel findings in the present study showing that prp is efficacious in chronic ulcers. (11)Significant difference in present study groups can be explained as topical application of platelet rich plasma to the injured cutaneous surface restores the decreased production of basal epithelial cells and thereby promotes faster healing. (12)

In the present study, 40 patients in study group showed mean wound contraction rate of 1.8mm per day. None of the patients showed any complications due to platelet rich plasma dressing hence platelet rich plasma can be used as an adjunct to accelerate wound healing.

#### CONCLUSION:

Platelet rich plasma dressing helps in wound healing by decreasing time taken for wound contraction and early epithelialization. Patients with platelet rich plasma dressing did not develop any complication during study period. Hence can be safely used as an adjunct to conventional dressing in treatment of chronic ulcers.

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