

## The Role of APRP in the Management of Post Skin Graft site

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### Abstract

The split thickness skin graft is a time-tested method for covering a raw area. The autologous platelet rich plasma, rich in growth factor was used to for the management of a skin grafted site and to prevent the graft site complications like graft contracture, hypertrophy and grafted site ulceration.

**Keywords:** Autologous platelet rich plasma; Split Thickness Skin grafting; Wound bed preparation; Regenerative Therapy.

### Introduction

The split thickness skin graft is a time-tested method of management of raw areas. The split thickness graft site can develop complications like hypertrophy, graft contracture, graft site ulceration. The autologous platelet rich plasma is rich in growth factors which is useful in the rejuvenation of the graft site.

### Materials and Methods

The study was conducted in department of plastic surgery at a tertiary care center. This study was conducted after getting informed consent and getting ethical committee clearance. The study detail is as follows.

A 50 years old female patient with no known co-morbidities was admitted with infected venous ulcer over the left leg. The wound was prepared with wound irrigated with normal saline, thorough debridement of the wound and NPWT-id for wound bed preparation. The patient was treated with parenteral antibiotics based on exudate culture and sensitivity reports and when the wound got healthy granulation tissue, she underwent Split thickness. The grafted site was opened on the 5th post operation day and the graft was inspected.

The graft site was given local infiltration of APRP on post-operative day 5, post-operative day 7, day 14 and post-operative day 21.

Technique of APRP preparation followed was the standard technique as described by Franco *et al.*<sup>1</sup> and Li *et al.*<sup>2</sup> The steps of APRP preparation is as follows:

*Step 1:* A 10mL of the patient's venous blood was taken and heparinized

*Step 2:* Centrifugation at 3000 RPM continued for 10 minutes. Three layers will form in the tube at the end of 10 minutes

*Step 3:* The upper layer of the three layers was aspirated using sterile needle and syringe

*Step 4:* Re-centrifugation at 4000 RPM for 10 minutes. At the end of 10 minutes, the content will get separated into two layers.

The bottom layer is the plasma rich in platelets and was aspirated using sterile needle and syringe. The APRP is infiltrated under all aseptic precautions to the grafted site. The grafted site was given compression dressing in the form of elastocrepe bandage and the limb was kept elevated at the foot end with pillow for three weeks. The graft site was evaluated with Vancouver scar scale score at the beginning of each session.

## Result

The graft was taken up fully and there was improvement in the VSS score



Fig. 1: Three layers of APRP



Fig. 2: APRP at graft site

## Discussion

The Venous ulcer usually requires months to heal and well known for recurrence. The negative pressure wound therapy is a method known to

decrease the downtime of wound bed preparation, which was described in 1997.<sup>3-5</sup>

APRP is defined as a portion of the plasma fraction of autologous blood with a platelet concentration above the baseline<sup>6</sup> APRP as contains a high concentration of alpha granules, is a cost-effective and safe method of obtaining high concentrations of these growth factors. The alpha granules of platelets are known to contain growth factors such as PDGF, vascular endothelial growth factor, TGF, EGF, which promote angiogenesis, cell proliferation, maturation, and matrix formation.<sup>7</sup> As APRP is rich in growth factors, the use of APRP has been researched in the field of regenerative medicine in conditions such as alopecia, chronic wounds, and scar management.

## Conclusion

The APRP has certainly role in rejuvenation of the graft site and preventing complications, but as this study is done on a single patient it is difficult to draw a definite conclusion, Needs further multicenter, randomized control trial to validate the study and also needs to be tried on wounds of various etiology

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