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Role of Autologous Platelet Rich Plasma in Application of Skin Grafts

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ABSTRACT

Aim: Skin grafting is a commonly done procedure in plastic surgery. One of the complications that the surgeon is worried about is skin graft failure. Various precautions have been described to prevent this complication. We would like to discuss the role of autologous platelet rich plasma in skin grafting.

Methods: Skin grafting was done for the raw area over the back post electrical burns. Intra-operatively, single injection of 2 ml APRP given to the Skin grafts.

Result: The Skin grafts were healthy, with well healed scars.

Conclusions: We proposed that APRP can be used in application of skin grafts. However, large randomized control trials are required for establishing its role.

Keywords: APRP; Skin grafts; Failure.

INTRODUCTION

ASkin graftis harvested when the surgeon needs to cover the raw area that needs to be covered, known as the recipient site in the local site. Skin grafts can be used to cover the raw area variety of body parts. The head, neck, chest, or breast areas, arms and legs, and the lower back, buttocks, or vagina are all examples. In this case report we will assess the use of autologous platelet rich plasma in the application of skin grafts.

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MATERIALS AND METHODS

In this case report, 32 year old male came to JIPMER Hospital with the chronic non healing ulcer over the lower back of size 5 X 5 cm for past 10 year post electrical burns. After wide local excision of the ulcer histopathology report came as Squamous cell carcinoma with all margins negative for tumor. After tumor removal size of the tumor ulcer size was around 8 x 8 cm. In view of scarred tissue all around the ulcer, local keystone flap based on the perforator on the right side of the ulcer and transposition flap on left side of the ulcer planned. The raw area created post local flaps from the donor site was covered with split skin grafting from the left thigh. During the application of skin grafts we prepared the skin grafts (Fig. 1) and wound bed by application of Autologous platelet rich plasma for decreasing the chance of graft failure. In this Patient, Graft uptake was good with the application of APRP.

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Intra-operatively, APRP was prepared using 10 ml of patient's blood, which was mixed with 1000 U heparin and centrifuged at 3000 rpm for 10 min in a centrifugation machine. The supernatant buffy coat is taken into a conical test tube and centrifuged at 4000 rpm for 10 min. The bottom 2 ml of the clear fluid obtained is APRP. APRP was sprayed over the wound bed and over the dermal surface of the skin grafts.[1]

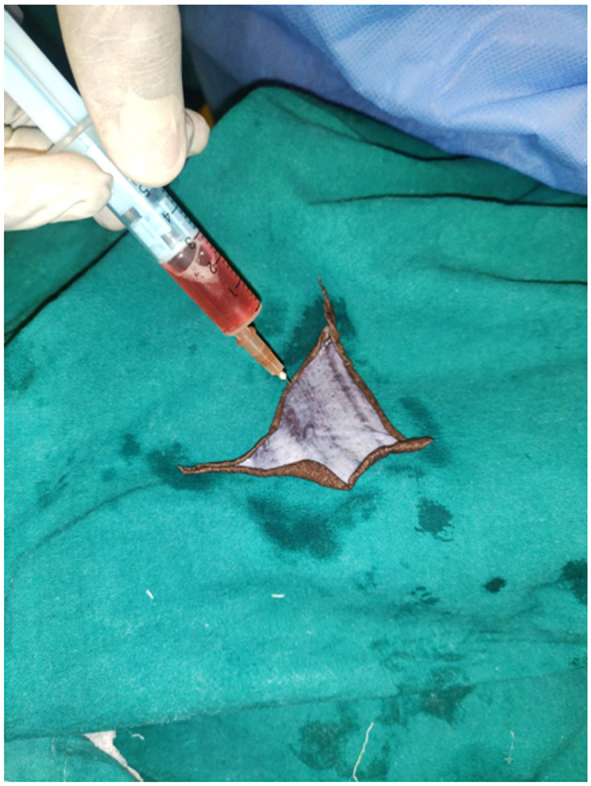

Fig. 1: Skin grafts

DISCUSSION

Our patient has scarred skin surrounding area due to electrical burns for which we planned excision of the ulcer with cover by transposition flap and post operative tip of transposition flap got necrosed and wound debridement done for which skin grafting was planned. As the scar tissue might cause unsatisfactory wound bed which increases the chance of graft failure and hence, we have decided to use APRP as an adjunctive procedure to help prevent skin graft failure. APRP contains several growth factors [(e.g., platelet-derived growth factor (PDGF)], vascular endothelial growth factor (EGF) 2 that are capable to stimulate angiogenesis and increase fibroblast cell differentiation, promote soft tissue healing. PDGF and EGF are the main growth factors involved in fibroblast migration, proliferation, and collagen synthesis.[3] Increased

RESULTS

In this case report, Graft uptake was good (Fig. 2). Skin grafts adhere well to surface of the wound bed and the healing was satisfactory. No complications noted with this procedure.

Fig. 2: Application of APRP treated Skin grafts.

concentrations of these growth factors are likely the reason for the accelerated soft tissue wound healing, which are suggested to be at least 2–3 times faster than that of normal.[4] These growth factors in APRP might have helped in angiogenesis and helped in the prevention of failure of skin grafts in our patients.

CONCLUSION

Loco regional flaps, free flaps, Skin grafts are commonly performed procedures in plastic surgery department. In this study we can able to appreciate the role ofAutologous platelet rich plasma in the application of skin grafts to decrease the failure rate. This was based on single case report, so validity of the splints should be tested by using it widely in many patients in future. These splints can be easily adaptable and can be used in any hospital.

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