

Role of APRP for A Successful Take of Split Skin Graft

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Abstract

Introduction: Autologous Platelet Rich Plasma (APRP) and its clinical applications have drastically evolved since its first use in an open heart surgery to avoid excessive blood transfusion [8].

It is being widely used in the field of plastic surgery and cosmetic medicine because of its wound healing properties [9,10].

Split skin grafts are mostly commonly performed resurfacing procedures in plastic surgery and it mainly depends on the wound bed for its take. We present a case report of 11year old female with post burn contracture right foot for which contracture release and split skin grafting with APRP application for augmenting the take was performed under GA.

Keywords: APRP; Split Skin Grafts; Post Burn Contracture.

Case Report

A 11 year old girl presented with a post burn extension contracture of right 3rd, 4th and 5th toes with subluxation of 5th toe metatarsophalangeal joint. Patient was treated with radiofrequency assisted post burn contracture incision release with k wire fixation of 5th toe, leaving a raw area of 3cm x 5cm over right



Fig. 1: Post Incision Release raw area of Post Burn Contracture Right foot

foot dorsum. 1ml of APRP was obtained by standard double centrifugation protocol using 5cc of patient's blood. APRP was sprayed topically over the raw area as well as injected into the wound margins. A split thickness skin graft was harvested from right thigh, placed over raw area and fixed with skin stapler. Check dressings revealed successful complete take of a graft without any graftloss or infection.



Fig. 2: APRP sprayed over raw area



Fig. 3: SSG fixed over the raw area



Fig. 4: Complete take of SSG

Discussion

APRP is a blood plasma enriched with platelets concentration $>10,00,000/\mu\text{L}$ in 5 ml of plasma. It is rich source of growth factors and cytokines like platelet derived growth factor, transforming growth factor beta, fibroblast growth factor, insulin like growth factors, vascular endothelial growth factor, epidermal growth factor, interleukin 8, keratinocyte growth factor, connective tissue growth factor which aid in repair and wound healing [1-4]. It has been found to stimulate epithelial, epidermal and endothelial regeneration and angiogenesis, promote collagen synthesis, augment hemostasis, reduce dermal scarring, accelerate soft tissue, bone healing and remodeling [5,6].

Split Thickness skin grafting is one of the commonest procedures performed in plastic surgery. The process of take of the graft involves plasma imbibition, inosculation and revascularization. A successful take of a graft depends on wound bed vascular status, its micro-environment and adequate hemostasis [7].

APRP being rich in platelets augments the healing process by platelet plug formation, conversion of fibrinogen to fibrin which in-turn helps in adhesion of the skin graft to the wound bed and provides a stable fixation. This property of APRP aids in hemostasis preventing any collection underneath the graft. The growth factors from APRP promote angiogenesis and collagen deposition augmenting the take of the graft [7].

Conclusion

APRP is an autologous, easily available and easy to prepare, safe biological fluid with excellent wound healing properties which can be used to augment the take of split skin grafts. We suggest a large volume randomized controlled study be conducted to validate the routine use of APRP for augmenting take of split skin grafts.

Conflicts of Interest

Nil

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