

Platelet Rich Plasma (PRP) for scalp hair loss

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Abstract *Objective* To evaluate PRP for scalp hair restoration.

Methods PRP Preparation Technique: Blood samples of 20 ml were taken utilizing EDTA tubes from the patients. Centrifugation 3000 Rev 1-3 minutes. PRP was prepared with plasma 2 ml (0.5 ml from each 4 tubes), activator 0.5 ml and lignocaine 0.5 ml; total 3 ml. With one centimeter distance approximately 15-20 injections were administered subcutaneously. Interval between four sessions was every two weeks, booster was given every three months. For medical treatment finasteride and minoxidil were given. The data was collected on a predesigned proforma and analyzed using SPSS and Excel software applications.

Results In this study, total 147 consecutive PRP sessions were performed on 46 patients. The age range was from 19 years to 61 years. There were 37 male and 9 female patients in this study. With this technique of PRP, scalp hair stopped falling, hair became stronger, regrowth of hair was satisfactory. The results showed satisfaction level up to 90%.

Conclusion We recommend our method of PRP preparation technique and time interval between each PRP session.

Key words
PRP, preparation, technique, standardization.

Introduction

The hair growth cycle undergoes four stages or phases: anagen (growth phase), catagen (transition phase), telogen/ exogen (shedding phase) and early anagen (growth phase). Causes of hair loss may be androgenic/ hereditary (AGA), medications-steroids, chemotherapy etc., environmental, traumatic, infection-fungal and psychological/ idiopathic.

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PRP is a concentrate of platelet-rich plasma protein derived from whole blood, centrifuged to remove red blood cells. PRP composition includes plasma rich in platelets and Platelets Derived growth factors. Growth-factor molecules associated with platelets, Platelet-derived growth factor (PDGF), Transforming growth-factor-beta (TGF- β), Vascular endothelial growth factor (VEGF), Epidermal growth factor (EGF), Fibroblast growth factor-2 (FGF-2) and Insulin-like growth factor (IGF). Studies testing the effect of PRP and standardization of time interval on hair growth are limited. This motivated us to take this study for further research and evaluation.

Gentile P *et al.* found that that A-PRP offers greater opportunity for hair count and total hair density than AA-PRP treated patients using an

identical PRP collection method.¹

Kieb M *et al.* identified some problems related to PRP preparation.² Wang *et al.*³ found that PRP with different platelets concentrations gives different results indicating preparing appropriate PRPs having effective and precise decision for improving tissue regeneration. El-Sharkawy *et al.*⁴ studied PRP growth factors and pro and anti-inflammatory properties. Standardization of PRP preparation remains important for effective and predictive results⁵ with targeted injection during growth phase of hair cycle. PRP has positive effects on androgenic alopecia and may be given as an adjuvant therapy.⁶ Cervelli V *et al.*⁷ studied AA-PRP injections on hair loss pattern. They found a significant increase in hair count in the treatment area after three months. There was also an increase in epidermis thickness in PRP treated hair skin. Numbers of follicles were also increased.

Materials and Method

It is a cross sectional observational study conducted at Faisal Hospital, Peoples Colony, Faisalabad, Pakistan from March 2019 to July 2020.

Aims and Objectives of the Study To evaluate PRP for hair loss.

Study Design and Setting This was a cross sectional study of the sampled population and was conducted at Faisal Hospital, Peoples Colony, Faisalabad, Pakistan.

Period of Study One year and four months from March 2019 to July 2020.

Sampling and sample Size There were 46 patients, 37 males and 9 females suffering from hair loss at scalp.

Inclusion Criteria All patients of both gender

having loss of scalp hair and were willing to undergo through the procedure were included in this study.

Exclusion Criteria Thrombocytopenia (low platelet count), hypofibrinogenaemia, haemodynamic instability (collapse), acute and chronic infections, chronic liver disease, anti-coagulation therapy (warfarin, dabigatran, heparin), allergy to previous session of PRP.

The Procedure PRP injections were administered slowly in the scalp at different sites of one centimeter distance. The results appeared after 2-3 months. One hundred forty seven consecutive sessions were done on patients with scalp hair loss. Most commonly patients had scalp hair loss due to familial, idiopathic/ environmental factors or androgenic alopecia.

PRP Preparation Technique Blood samples of 20 ml were taken utilizing EDTA tubes from the patients. Centrifugation 3000 Rev 1-3 minutes. PRP, buffy coat and red cells were obtained. Activators (hyaluronic acid, calcium gluconate and biotin), nutritional agent, and local anaesthetic were added. PRP was prepared with plasma 2 ml (0.5 ml from each 4 tubes), activator 0.5 ml and LA 0.5 ml; total 3 ml. The following injection technique was used for scalp: injection was administered in the subcutaneous tissue around the hair follicle (below skin and connective tissue and above the galea aponeurosis, loose areolar tissue and pericranium. With one centimetre distance 15-20 injections were administered. Standardization: interval between four sessions every two weeks, booster was given every three months. For medical treatment finasteride and minoxidil were given.

The data was collected on a predesigned proforma and analyzed using SPSS and Excel software applications.

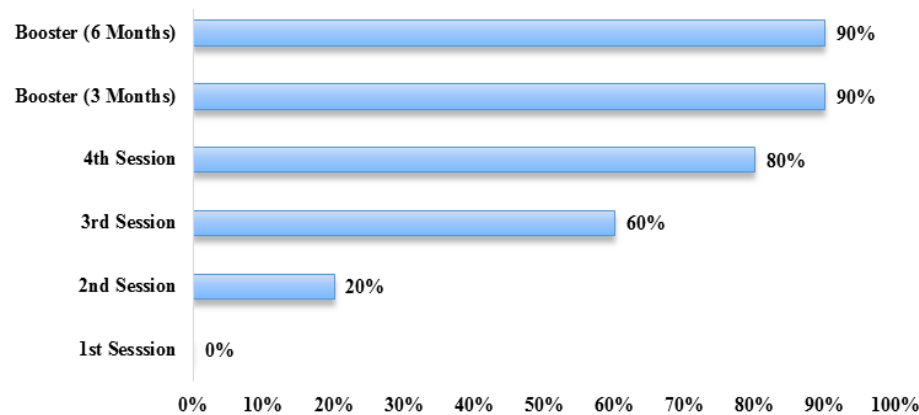


Figure 1 Satisfaction level.

Patients taking aspirin or ibuprofen were requested to stop taking these medicines before the procedure started. Vitamin or supplements preparations containing Omega 3 fatty acids were also discontinued temporarily. The patients were advised not to exercise or head bending to avoid bleeding, haematoma and infection. Use of paracetamol was advised for headache for 24 hrs. after the procedure.

Patients were informed that the success of the treatment (hair growth) may take few weeks to start and for some patients it may take up to three months to notice the full effects.

Results

In this study total 147 consecutive PRP sessions were performed on 46 patients. The age range was from 19 years to 61 years. There were 37 male and 9 female patients. With this technique of PRP preparation and injection technique and evidence based standardized set protocol for PRP time interval between each session, scalp hair stopped falling, hair became stronger and regrowth of hair was satisfactory. The results showed satisfaction level 60-90% assessed by using visual analogue scoring system (**Figure 1**).

Discussion

We found PRP quite effective and satisfactory

for scalp hair loss in the AGA. It was found that PRP preparations are very effective on male androgenic alopecia without any significant side effect.⁸ Our study found almost similar result. The following side effects were observed in our study: discomfort (in almost all patients), headache 34 patients), swelling or induration at injection site (33 patients), bruising (27 patients), skin discoloration (only 14 patients complained of this side effect). PRP injections were found to be effective both on male as well as female in hair loss treatment without any major side effects.⁹ The overall efficacy of PRP is still controversial, partly due to lack of standardized preparation protocols.¹⁰ In our study we found the PRP preparation method quite satisfactory giving expected outcome.

Conclusion

We recommend our method of PRP preparation. To maintain the effect of PRP, the booster session every three month is mandatory.

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