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Title: "Harnessing Platelet-Rich Plasma for Effective Hair Restoration"

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Abstract

Objective: to evaluate the safety and efficacy of platelet-rich plasma (PRP) in treating patients' hair loss.

Methods: Twenty individuals were recruited for the study, consisting of three females and seventeen men. In a Regen centrifuge, PRP was made utilizing the single-spin technique. Then, over the course of four therapy sessions spaced 30 days apart, the activated PRP was injected into the scalp. Two booster sessions were also given, separated by six months.

Result: With every treatment session, hair loss showed a decreasing trend that culminated in an amazing 75%–80% recovery by the end of the fourth month. High levels of patient satisfaction were noted, and no negative effects were noted.

Conclusion: The results indicate that PRP has less negative effects and can be used safely as a treatment alternative for people who are losing hair. Combining PRP with complementary therapies like medicated hair sprays, specialty shampoos, mesotherapy, and oral supplements like Biotin may improve its overall results, while further research is needed to confirm its effectiveness.

Key words: hair fall, baldness, treatment, techniques

Introduction:

This disorder is also referred to as male-pattern baldness in men. In females, the hairline does not recede and the hair becomes thinner throughout the head. The pattern of hair fall is inherited, androgen-dependent, and linked to non-scarring, gradual miniaturization of the hair shaft and follicles¹. The outcome is a change in the hair cycle, with the telogen phase lasting longer and the anagen phase lasting shorter. Because the anagen phase determines hair length, this causes shorter hair and eventually causes males to seem bald²⁻³. Due to their paracrine factors, immunomodulatory, and anti-inflammatory qualities, mesenchymal stromal cells (MSC) are increasingly being employed in regenerative medicine, offering hope for the treatment of numerous unmet medical needs as well as for repair and regeneration⁴⁻⁶. Male pattern baldness, which can usually develop at any point after puberty, is the primary cause of hair loss in men, while female pattern hair loss is the predominant cause in women. The disorder nearly always affects both boys and females; the pattern of inheritance varies, though. Hair loss often affects the mid-frontal scalp, vertex, and temporal regions in males; in females, there is more thinning of the hair on the frontal/parietal scalp and higher density across the occipital scalp⁷⁻⁸. Genetics is often a determinant of patterned hair loss. It is also recognized that circulating androgens, hormone metabolism, and the quantity and affinity of androgen receptors all play significant roles in pattern baldness. Dihydrotestosterone (DHT), which has a greater binding affinity than

testosterone, is produced as a result of the metabolism of testosterone. As a result, baldness accelerates more quickly in AGA due to a specific pattern of decreased scalp hair follicles. A major factor in the management and prevention of AGA is lowering DHT levels⁹⁻¹⁰.

Methodology:

Twenty patients—seven male and three female—participated in this trial to determine whether platelet-rich plasma (PRP) therapy is beneficial for treating hair loss. Prior to being injected into the patients' scalps, PRP was activated using the single-spin procedure in a Regen centrifuge. Four sessions were given at 30-day intervals as part of the therapy strategy, with two booster sessions given after a six-month break. Throughout the trial, patient responses and results were continuously observed. The patients were chosen with the intention of offering a varied range of hair loss types and genders. The single-spin technique was selected for PRP preparation because of its effectiveness and ease of use. The goal of a methodical treatment planning strategy with set intervals and booster sessions was to evaluate the overall impact of PRP therapy on hair healing. Safety was given first priority in this trial; therefore no side effects were noted during or following treatment sessions. A thorough and consistent approach was taken in the technique, which made it possible to evaluate PRP's effectiveness in treating hair loss issues.

Results:

Table 1: treatment session and result

Session	Hair loss reduction (%)
1	25
2	50
3	65
4	75-80

Table 2: patient satisfaction and adverse effects

Aspect	Observation
satisfaction	High
Adverse effects	None

Pic 1&2 : 1st session and second session



Pic 3&4: 3rd & 4th session



Discussion:

Hair fall is a common hair condition that many people experience, but it can also be one of the most challenging to treat. This is because choosing a treatment plan often requires taking into account a number of crucial factors, including the efficacy of the products being used, the potential for side effects, and the lengthy cost of the course of treatment¹¹. The patients' hair loss showed a positive trend during the treatment sessions. A significant 25% reduction was seen in the first session, and in the second and third sessions, the improvement increased to 50% and 65%, respectively. The most noteworthy result was observed following the conclusion of the fourth session, demonstrating astounding 75%–80% recuperation. Although oral finasteride is FDA-approved, adverse effects can still occur. Gynecomastia, testicular pain, hypersensitivity reactions, decreased male sexual function, and contraindication in pregnant women and women of reproductive potential due to the possibility of feminizing a male fetus are a few of the documented side effects¹². Over the course of several sessions, this progressive improvement implies that the PRP therapy is effective in addressing hair loss concerns. Further evidence of the treatment's efficacy and the participants' favorable response to the therapy comes from the fact that patient satisfaction stayed high between sessions. PRP is a useful treatment for female hair regrowth, however not as useful as minoxidil¹³. Studies conducted a thorough systematic review and meta-analysis and found that PRP was a highly effective treatment¹⁴⁻¹⁵. The study's key finding—that there were no side effects—highlights PRP's safety profile when used to treat hair loss. These positive outcomes highlight PRP's potential as a secure and useful treatment option for patients dealing with hair loss and offer important new insights into the therapeutic usage of the material.

Conclusion:

The study emphasizes platelet-rich plasma (PRP) therapy's effectiveness and safety as a potential treatment for hair loss. PRP's therapeutic potential in treating this frequent concern is supported by the significant reduction in hair loss shown across several treatment sessions, high patient satisfaction, and the lack of side effects. By the end of the fourth month, 75%–80% of patients had recovered, which shows that PRP is gradually and favorably affecting hair regrowth. Though the study acknowledges that more research is necessary to validate and improve the efficacy, it does open up possibilities for investigating integrated therapy techniques. Combining PRP with supplementary techniques including mesotherapy, medicated hair sprays, oral supplements, and hair fall shampoos may improve patients' overall treatment results.

References:

- 1: Lolli, F., Pallotti, F., Rossi, A., et al. (2017) Androgenetic Alopecia: A Review. *Endocrinology*, 57, 9-17
- 2: Yoo, B.Y., Shin, Y.H., Yoon, H.H., Seo, Y.K., Song, K.Y. and Park, J.K. (2010) Application of Mesenchymal Stem Cells Derived from Bone Marrow and Umbilical Cord in Human Hair Multiplication. *Journal of Dermatological Science*, 60, 74-83.
- 3: Kerure, A.S. and Patwardhan, N. (2018) Complications in Hair Transplantation. *Journal of Cutaneous and Aesthetic Surgery*, 11, 182-189.
- 4: Deng, H., Sun, C., Sun, Y.X., et al. (2018) Lipid, Protein, and MicroRNA Composition within Mesenchymal Stem Cell-Derived Exosomes. *Cellular Reprogramming*, 20, 178-186.
- 5: Won, C.H., Park, G.H., Wu, X., et al. (2017) The Basic Mechanism of Hair Growth Stimulation by Adipose-Derived Stem Cells and Their Secretory Factors. *Current Stem Cell Research and Therapy*, 12, 535-543.
- 6: Shin, H., et al. (2017) Up-to-Date Clinical Trials of Hair Regeneration Using Conditioned Media of Adipose-Derived Stem Cells in Male and Female Pattern Hair Loss. *Current Stem Cell Research and Therapy*, 12, 524-530.
- 7: Narita, K., Fukuoka, H., Sekiyama, T., Suga, H. and Harii, K. (2020) Sequential Scalp Assessment in Hair Regeneration Therapy Using an Adipose-Derived Stem Cell-Conditioned Medium. *Dermatologic Surgery*, 46, 819-825.
- 8: Balasubramanian, S., Thej, C., Walvekar, A., et al. (2017) Evaluation of the Secretome Profile and Functional Characteristics of Human Bone Marrow Mesenchymal Stromal Cells-Derived Conditioned Medium Suggest Potential for Skin Rejuvenation. *Journal of Cosmetics, Dermatological Sciences and Applications*, 7, 99-117.
- 9: Gupta, P.K., Krishna, M., Chullikana, A., et al. (2017) Administration of Adult Human Bone Marrow-Derived, Cultured, Pooled, Allogeneic Mesenchymal Stromal Cells in Critical Limb Ischemia Due to Buerger's Disease: Phase II Study
- 10: Bhat, S., Amirthalingam, M., Ballambat, S.P., et al. (2021) Novel Bioactive Formulation Derived from the Conditioned Medium of Mesenchymal Stromal Cells Reduces Under-Eye Dark Circles in Human Volunteers. *Journal of Cosmetic Dermatology*, 21, 814-826.
- 11: Nestor MS, Ablon G, Gade A, Han H, Fischer DL: Treatment options for androgenetic alopecia: Efficacy, side effects, compliance, financial considerations, and ethics. *J Cosmet Dermatol*. 2021, 20:3759-81
- 12: Kanti V, Messenger A, Dobos G, et al.: Evidence-based (S3) guideline for the treatment of androgenetic alopecia in women and in men - short version. *J Eur Acad Dermatol Venereol*. 2018, 32:11-22.

- 13: Bruce AJ, Pincelli TP, Heckman MG, Desmond CM, Arthurs JR, Diehl NN, et al. A randomized, controlled pilot trial comparing platelet-rich plasma to topical minoxidil foam for treatment of androgenic alopecia in women. *Dermatol Surg.* 2020;46:826–32.
- 14: Zhou S, Qi F, Gong Y, Zhang C, Zhao S, Yang X, et al. Platelet-rich plasma in female androgenic alopecia: A comprehensive systematic review and meta-analysis. *Front Pharmacol.* 2021;12:726
- 15: Tawfik AA, Osman MAR. The effect of autologous activated platelet-rich plasma injection on female pattern hair loss: A randomized placebo-controlled study. *J Cosmet Dermatol.* 2018;17:47–53

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