

Platelet-Rich Plasma Therapy in Male Androgenetic Alopecia: A Case Report and Contemporary Review

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ABSTRACT

Platelet-rich plasma (PRP) therapy has emerged as a promising non-surgical modality for treating androgenetic alopecia (AGA), leveraging autologous growth factors to stimulate follicular regeneration. This report presents the case of a 28-year-old male with Norwood-Hamilton Grade III Vertex AGA, demonstrating early crown thinning, mild frontal recession, and signs of progression toward Grade IV.

The patient exhibited diffuse thinning over the vertex and mid-scalp, with lateral zones relatively preserved. A structured PRP protocol involving intradermal injections was administered over three months. The patient demonstrated significant improvement in hair density and shaft thickness, with enhanced scalp coverage.

These findings are consistent with recent literature supporting PRP's efficacy in early-to-moderate AGA. The case highlights the importance of standardized protocols, appropriate patient selection, and realistic expectations in optimizing outcomes. PRP continues to gain traction as a safe, minimally invasive option for young men seeking hair restoration.

Keywords: Platelet-Rich Plasma (PRP); Androgenetic Alopecia (AGA); Hair Restoration; Male Pattern Baldness; Regenerative Therapy; Double-Spin PRP Protocol; Intradermal Injections; Hair Density; Non-Surgical Hair Loss Treatment; Growth Factors (PDGF, VEGF, TGF- β); Scalp Microneedling; PRP Standardization; Combination Therapy (PRP + Minoxidil); Clinical Case Report; Trichology.

INTRODUCTION

Androgenetic alopecia (AGA) is a prevalent condition affecting up to 80% of men by the age of 70. It typically manifests as progressive thinning of scalp hair, particularly at the temples and vertex, driven by androgen-mediated miniaturization of hair follicles in genetically predisposed individuals. Although not medically harmful, AGA can significantly impact psychological well-being and self-esteem.

Conventional treatments such as topical minoxidil and oral finasteride have been the mainstay for decades. While these agents can slow hair loss and promote partial regrowth, their limitations—including variable efficacy and potential side effects—have led to growing interest in alternative therapies.

Among these, PRP therapy has gained attention for its regenerative potential. Derived from autologous blood, PRP is rich in growth factors like PDGF, VEGF, and TGF- β , which promote angiogenesis, reduce inflammation, and stimulate dermal papilla cells—key regulators of hair follicle cycling ^[1]. By enhancing the follicular microenvironment and prolonging the anagen phase, PRP offers a biologically sound, low-risk approach to managing AGA. Its compatibility with adjunctive treatments such as microneedling and minoxidil further enhances its clinical utility ^[2].

CASE REPORT

Patient Profile

- **Age/Sex:** 28-year-old male
- **Diagnosis:** AGA, Norwood-Hamilton Grade III Vertex
- **History:** Progressive thinning over three years, primarily affecting the frontal and vertex regions
- **Family History:** Positive paternal history of AGA
- **Exclusion Criteria:** No autoimmune conditions, bleeding disorders, or corticosteroid use

Treatment Protocol

- **PRP Preparation:** Double-spin centrifugation (1500 rpm \times 10 min, followed by 3500 rpm \times 10 min)
- **Platelet Concentration:** 4–5 \times baseline
- **Injection Technique:** Intradermal microinjections (0.1 mL/cm²) using a 30G needle
- **Sessions:** Four sessions at four-week intervals
- **Adjunctive Therapy:** None (no minoxidil or finasteride used)

Outcomes

Visual Assessment

- **Baseline:** Diffuse thinning at the vertex and mid-scalp, with visible scalp and miniaturized hair shafts
- **3-Month Follow-Up:** Notable increase in hair density and shaft thickness, reduced scalp visibility, and improved mid-scalp volume

Quantitative Analysis

- **Baseline Hair Density:** 78 hairs/cm²

- **Post-Treatment (Week 16):** 102 hairs/cm²
- **6-Month Follow-Up:** 98 hairs/cm² (stable retention)

Patient Feedback

- **Satisfaction Score:** 8/10
- **Adverse Effects:** Mild erythema and tenderness post-injection, resolved without intervention



Pre op

3 Months Post Op

DISCUSSION

This case illustrates the clinical benefits of PRP therapy in a young male with early-stage AGA. The structured protocol and absence of adjunctive treatments allowed for a clear evaluation of PRP's standalone efficacy. The observed improvement in hair density and patient satisfaction aligns with findings from recent studies and meta-analyses ^[1,4,9].

The use of a double-spin technique likely contributed to the favorable outcome by enhancing platelet concentration and growth factor availability ^[8]. Literature suggests that PRP is most effective in Grades II–IV AGA, particularly when administered using consistent protocols ^[1].

Despite its promise, PRP therapy faces challenges. Variability in preparation methods—including centrifugation parameters, platelet yield, and injection techniques—can lead to inconsistent results [1][8]. The lack of universal standardization remains a barrier to reproducibility and broader clinical adoption.

Moreover, the commercialization of PRP has led to concerns about unregulated practices. Reports have highlighted instances of clinics offering PRP without adequate training or evidence-based protocols, raising ethical and safety issues ^[10]. Transparent communication, informed consent, and adherence to validated methods are essential to uphold patient trust.

Combination therapies may further enhance outcomes. Studies suggest that PRP, when used alongside minoxidil or microneedling, may yield synergistic effects ^[5]. However, more robust comparative trials are needed to establish optimal combinations and long-term efficacy.

CONCLUSION

PRP therapy represents a valuable addition to the therapeutic arsenal for AGA, particularly in its early stages. This case underscores the potential of PRP to improve hair density and scalp coverage without pharmacologic side effects. The patient's positive response, achieved through a standardized protocol and without adjunctive agents, reinforces PRP's role as a standalone treatment in select candidates.

Moving forward, the focus must shift toward standardizing PRP protocols, refining patient selection criteria, and exploring combination strategies. Ethical practice and patient education remain paramount, especially in an increasingly commercialized aesthetic landscape. With continued research and clinical vigilance, PRP may well become a cornerstone in regenerative hair restoration.

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