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Alopecia Areata Treated with Advanced Platelet-rich Fibrin Using Micronization

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Fig. 1. Micronization of PRF into injectable form using a blade in a Luer-to-Luer connector.

CASE PRESENTATION

The patient is a 28-year-old man with no medical or surgical history who presented to clinic on March 10th with two hairless spots consistent with AA of the occipital region (Fig. 2). He first noticed the spots after a haircut two weeks prior. He has no family history of any autoimmune disorders. The patient received the first Moderna vaccine dose on January 14, 2021 and the second dose on March 1, 2021. In between doses, the patient had symptomatic COVID-19 infection, for which he tested positive on January 22, 2021. His only symptoms were headache and sore throat of three days duration with no fever, chills, cough, shortness of breath, ageusia, or anosmia. Patient was treated with aPRF injections with the use of micronization as described above. The first treatment was on March 10, 2021 and a second intralésional session was performed on May 4, 2021 (Fig. 3). There was resolution at follow-up on September 13, 2021 (Fig. 4). He used no other treatments during this time.



Fig. 2. A 28-year-old man who presented with AA in two spots in the occipital region.



Fig. 3. Intralésional injection of PRF.

DISCUSSION

AA is believed to be among the most common autoimmune conditions in humans, with an estimated lifetime risk of 1.7%–2.1%.⁸ COVID-induced AA has emerged as a novel documented sequela of the virus in at least four other patients in two different studies, with one study noting the rapidly progressive nature and unresponsiveness to 1–2 months of topical, intralésional, and/or nutritional

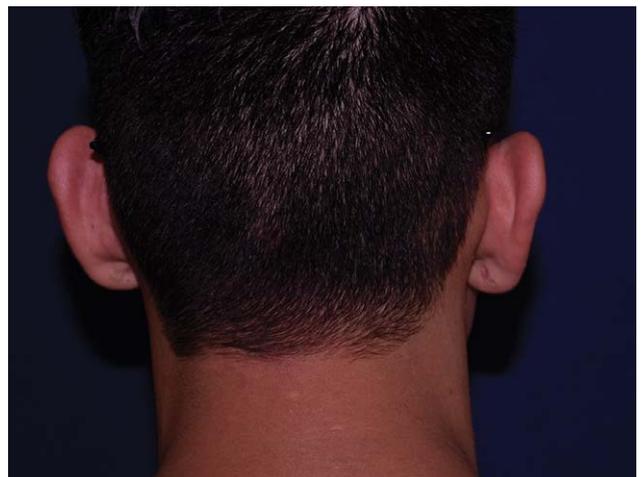


Fig. 4. Six months after two treatments of intralésional PRF.

treatments.^{9,10} We mention this because our patient had no medical history and no family history of any autoimmune diseases before his first episode of AA. However, more research is needed to prove AA as a probable result of COVID-19 infection.

After a literature search with the terms “PRF,” “alopecia areata,” “alopecia,” and other modifiers on PubMed, EMBASE, and Google Scholar, we identified four prior studies that have been published using PRF for the treatment of alopecia, but their approach is different than ours as they were all done for the treatment of androgenetic alopecia and three of them used iPRF instead of aPRF. The earliest study in 2014 treated androgenetic alopecia using “platelet-rich fibrin matrix,” which was spun at 1100g for 6 minutes first using proprietary thixotropic separator gel tubes and transferred to a closed-vacuum tube after adding calcium chloride. The solution was injected within 8–10 minutes of activation “before a solid fibrin mesh with adherent platelets develops.”¹¹ This is different from our approach as we form the fibrin mesh containing the leukocytes as aPRF.

A large study published in 2018 of 168 patients using iPRF for androgenetic alopecia reported good outcomes, but it used a two-step process for the creation of iPRF using anticoagulant spinning at 1500 rpm for 5 minutes followed by filtration through a filter.¹² Two studies used iPRF spun at speeds ranging from 700 to 800 rpm for a time of 4 minutes in small case series of three and four cases, respectively.^{13,14} These four studies are different from our patient as we are treating alopecia areata and not androgenetic alopecia. We do this by using aPRF formed by centrifugation at a higher speed of 2800 rpm for 5 minutes to form the fibrin mesh, which we then micronize for intralesional injection.

The preferred initial treatment for AA in patients with limited bald spots typically consists of intralesional and/or topical corticosteroids.¹⁵ Results reported include complete regrowth of hair after 4 months in 40 of 62 patients (63%) treated with monthly injections of triamcinolone acetonide.¹⁶ Other first-line treatments include topical immunologics, or systemic corticosteroid therapy. Anthralin is second-line therapy. Janus kinase inhibitors, methotrexate, azathioprine, sulfasalazine, and cyclosporine are reserved for refractory disease. Alternative therapies include minoxidil, lasers, and PRP.¹⁵

PRF has been shown to continuously release large amounts of growth factors for up to 28 days which makes it an ideal treatment for AA.¹⁷ Through micronization, it is possible to convert the aPRF clot into a particle size injectable through a smaller gauge needle, similar to fat grafting.¹⁸ This allows for the quick preparation of the solutions for injection using the patient’s blood without anticoagulants, the added benefits of increased growth factors, and the flexibility of injecting with smaller needles as the PRF matrix is too thick for standard injection needles compared with PRP. Although alopecia areata is self-resolving in 50% of cases within a year, typical treatment consists of monthly injections with intralesional steroids due to its recurrence, and our patient had similar results with two treatments almost 2 months apart. Ultimately,

more trials are needed comparing the benefits of PRF versus PRP in the treatment of AA, and we are in the process of developing a single-use device for micronization from the proposed mechanism used.

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REFERENCES

1. Trink A, Sorbellini E, Bezzola P, et al. A randomized, double-blind, placebo- and active-controlled, half-head study to evaluate the effects of platelet-rich plasma on alopecia areata. *Br J Dermatol.* 2013;169:690–694.
2. Dohan D, Donsimoni JM, Navarro G, et al. Platelet concentrates. Part I: technologies. *Implantodontie.* 2003;12:5–16.
3. Dohan DM, Choukroun J, Diss A, et al. Platelet-rich fibrin (PRF): a second-generation platelet concentrate. Part II: 17. Platelet-related biologic features. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.* 2006;101:e45–e50.
4. Ghanaati S, Booms P, Orlowska A, et al. Advanced platelet-rich fibrin: a new concept for cell-based tissue engineering by means of inflammatory cells. *J Oral Implantol.* 2014;40:679–689.
5. Kobayashi M, Kawase T, Okuda K, et al. In vitro immunological and biological evaluations of the angiogenic potential of platelet-rich fibrin preparations: a standardized comparison with PRP preparations. *Int J Implant Dent.* 2015;1:31.
6. Kobayashi E, Flückiger L, Fujioka-Kobayashi M, et al. Comparative release of growth factors from PRP, PRF, and advanced-PRF. *Clin Oral Investig.* 2016;20:2353–2360.
7. Fan Y, Perez K, Dym H. Clinical uses of platelet-rich fibrin in oral and maxillofacial surgery. *Dent Clin North Am.* 2020;64:291–303.
8. Mirzoyev SA, Schrum AG, Davis MDP, et al. Lifetime incidence risk of alopecia areata estimated at 2.1% by Rochester Epidemiology Project, 1990–2009. *J Invest Dermatol.* 2014;134:1141–1142.
9. Rossi A, Magri F, Michelini S, et al. New onset of alopecia areata in a patient with SARS-CoV-2 infection: possible pathogenetic correlations? *J Cosmet Dermatol.* 2021;20:2004–2005.
10. Flvenson D. COVID-19: association with rapidly progressive forms of alopecia areata. *Int J Dermatol.* 2021;60:127.
11. Sclafani AP. Platelet-rich fibrin matrix (PRFM) for androgenetic alopecia. *Facial Plast Surg.* 2014;30:219–224.
12. Schiavone G, Paradisi A, Ricci F, et al. Injectable platelet-, leukocyte-, and fibrin-rich plasma (iL-PRF) in the management of androgenetic alopecia. *Dermatol Surg.* 2018;44:1183–1190.
13. Arora R, Shukla S. Injectable-platelet-rich fibrin-smart blood with stem cells for the treatment of alopecia: a report of three patients. *Int J Trichology.* 2019;11:128–131.
14. Shashank B, Bhushan M. Injectable platelet-rich fibrin (PRF): the newest biomaterial and its use in various dermatological conditions in our practice: a case series. *J Cosmet Dermatol.* 2021;20:1421–1426.
15. Messenger AG. Alopecia areata: management In: Post TW, Rutgeerts P and Grover S, eds. *UpToDate.* Riverwoods, IL: Wolters Kluwer; 2021. Available at <https://www.uptodate.com/contents/alopecia-areata-management#H37>. Accessed September 20, 2021.
16. Kubeyinje EP. Intralesional triamcinolone acetonide in alopecia areata amongst 62 Saudi Arabs. *East Afr Med J.* 1994;71:674–675.
17. Yu P, Zhai Z, Lu H, et al. Platelet-rich fibrin improves fat graft survival possibly by promoting angiogenesis and adipogenesis, inhibiting apoptosis, and regulating collagen production. *Aesthet Surg J.* 2020;40:NP530–NP545.
18. Vazquez OA, Markowitz MI, Becker H. Fat graft size: relationship between cannula and needle diameters. *Cureus.* 2020;12:e7598.