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## PRP FOR HAIR LOSS – FACT OR FICTION?

### Dr Ramon Grimalt explores the evidence base behind Platelet Rich Plasma (PRP) therapy for hair loss indications

The use of Platelet Rich Plasma (PRP) therapy for hair loss indications is widely available and marketed by cosmetic and dermatological clinics around the world. However, when looking at whether it works, how we know if it works, or what the standard treatment protocols should be, we must look at the knowledge base in the form of published clinical papers. Only by critically analysing this evidence can we decide if we should perform it in the best interests of our patients, or if we are offering it simply because it is lucrative, but lacks a real grounding in scientifically proven results.

Let us discuss the data.

A paper published by Trink et al. in 2013 sought to evaluate the efficacy and safety of PRP for the treatment of alopecia areata in a randomised, double-blind, placebo- and active-controlled, half-head, parallel-group study.<sup>1</sup> In my opinion, this paper is flawed, and I am surprised that the British Journal of Dermatology accepted it for publication. During this clinical trial, they performed PRP treatment on patchy alopecia areata and achieved some good results; however, we know that there is spontaneous resolution in up to 80%

of cases of patchy alopecia areata. With this known fact, it becomes difficult to attribute the results to the use of PRP in these patients. The published images also show the patients in different positions, making it difficult to accurately assess and prove hair regrowth.

Stevens and Khetarpal from Ohio in the USA published a paper in the International Journal of Women's Dermatology in 2018, where they performed a review of the literature and proposed treatment protocol for PRP for androgenetic alopecia (AGA).<sup>2</sup> The piece noted that when it comes to treating AGA, a standard practice for PRP preparation and administration, as well as a method to evaluate results have not yet been established, so they sought to discuss the options proposed within currently available published literature. However, when we get to the conclusion of this paper, we see a sentence which is all too familiar when discussing the efficacy of PRP in hair treatments.

The authors state, "...Although PRP does appear to be beneficial, the preparation, dosage, number, and interval of treatment sessions, as well as injection technique, vary between the studies due to a lack of standardisation of

*PRP preparation. This makes inferring conclusions about its clinical efficacy difficult. To further classify the effects of PRP on hair regrowth in AGA, randomised placebo-controlled studies with larger sample sizes are needed...*"

A 2017 paper published in the Stem Cell Investigation Journal by Garg and Manchanda in India, looked at whether PRP is an 'elixir' for the treatment of alopecia.<sup>3</sup> This study was based on the personal experience of treating 177 patients with PRP, alongside a review of the available literature. The authors noted excellent results from treatment, but the study was not performed in a well-controlled manner and referenced past studies which I believe to be flawed, namely the paper from Dr Rinaldi et al. Therefore, they have started from an erroneous way of thinking by basing their practice on results from other researchers who have been shown to be incorrect. Garg and Manchanda also compared PRP against Minoxidil for treating alopecia areata and claimed PRP to be more effective, yet it is well known that Minoxidil does not work for alopecia areata.

Salvatore Giordano and a group of researchers from Finland, Spain,

and the UK published another interesting paper in 2018 in the International Journal of Trichology.<sup>4</sup> The researchers undertook a meta-analysis on the evidence of PRP for AGA. I believe that this meta-analysis was undertaken well and interestingly, yet again, the conclusion notes the lack of evidence and the need for more clinical trials to truly establish if, and how, PRP is working for hair loss indications. *"Local injection of PRP for androgenic alopecia might be associated with an increased number of hairs in the treated areas with minimal morbidity, but there is clearly a lack of scientific evidence on this treatment modality. Further studies are needed to evaluate the efficacy of PRP for AGA."*

A 2018 review of the literature in relation to the effectiveness of PRP for AGA was also published in the Skin Appendage Disorders Journal by Cervantes et al. and showed similar findings.<sup>5</sup> The conclusion states, *"... This field would benefit from additional large-scale double-blind, randomised control studies, with standardised PRP preparation methods and administration protocol, physician and subject assessment, isolating the effects in different grades of AGA, and performing long-term follow-up..."*

All of these published clinical papers make it clear that, as practitioners, we do not know how many times you need to perform the PRP treatments to achieve (any) results with these patients because there are no protocols, methods, or standardisation of techniques for everyone to follow.

Alongside my colleague, Dr Rubina Alves, I published a paper in 2018, also in the Skin Appendage Disorders Journal, which was a review of PRP, the history, biology, mechanism of action and classification.<sup>6</sup> The aim of this study was to discuss the various options which have been outlined for practitioners performing PRP for hair. Of note is the table<sup>6</sup> which explores all the different types of



**Table 2**  
Blood collection and centrifugation protocols from different medical devices to obtain platelet-rich plasma

Devices	Blood collection/anticoagulant	Centrifugation		
		number of times	speed/time	centrifuge
Selphyl <sup>®</sup>	Tube 9 mL/sodium citrate	1	1,100 g/6 min	Classic
PRGF Endoret <sup>®</sup>	Tube 9 mL/sodium citrate	1	270 g/7 min	Classic
Cascade <sup>®</sup>	Tube 9 mL/sodium citrate	2	1,100 g/6 min 1,450 g/15 min	Classic
Plateltex <sup>®</sup>	Tube 9 mL/ACD	2	180 g/10 min 1,000 g/10 min	Classic
Regenkit <sup>®</sup>	Tube 9 mL/sodium citrate	1	1,500 g/9 min	Classic
ACP Arthrex <sup>®</sup>	Syringe 15 mL/ACD or no anticoagulant	1	1,500 rpm/5 min	Adapted
GPS III <sup>®</sup>	Syringe 30 or 60 mL/ACD	1	3,200 rpm/15 min	Adapted
Genesis <sup>®</sup>	Syringe 12 mL/ACD	1	2,400 rpm/12 min	Adapted
SmartPrep 2 <sup>®</sup>	Syringe 20 or 60 mL/ACD	2	2,500 rpm/4 min 2,300 rpm/10 min	Adapted
Proteal <sup>®</sup>	Syringe 20 mL/sodium citrate	1	1,800 rpm/8 min	Adapted
Magellan <sup>®</sup>	Syringe 30–60 mL/ACD	-	-	Adapted device

ACD, acid citrate dextrose. Courtesy of Dr. Jeremy Magalon, adapted from Dohan Ehrenfest [38].

systems used to obtain PRP. When looking at this long list, we must ask ourselves if we think we will be dealing with the same resultant product? If we will achieve the same results with all of them? I would argue that it is impossible to state that all these PRP types will achieve the same therapeutic effect. Therefore, we and all these published studies cannot be evaluating the same treatment.

When I look at the results that we achieved in our clinical studies, comparing the patient pictures, before and at a six-month review, I cannot, hand on heart, see a difference and I cannot say that it is really working. We performed global photographs of the three areas of each patient's head – the vertex, frontal and occipital - using the Canfield Orthostatic device to ensure consistency across all patients who were photographed. Even with this level of control, we could not see a difference in patient outcomes. I believe that sometimes when we look at clinical

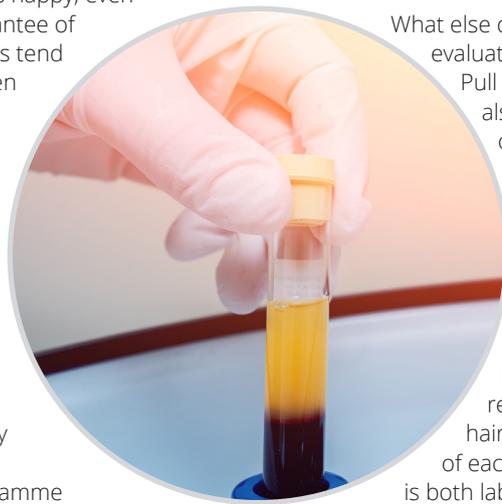
results, especially if the photography has not been well controlled, it is very easy to be tricked into thinking that the results appear to be better than they are in terms of hair changes. We also performed photo-trichogram imaging in some patients to try to find slight differences in hair count or hair density, but this is not a precise method and statistically can vary according to hair growth cycles.

A further randomised, placebo-controlled, double-blind, half-head study, which Dr Alves and I published in Dermatologic Surgery in 2016, also looked at the efficacy of PRP for the treatment of AGA.<sup>7</sup> The conclusion we reached was that the clinical research provides support that the application of PRP may have a therapeutic effect on AGA and can be used as a safe, complementary treatment option. However, we felt that more controlled and well-designed clinical trials should be conducted to confirm the clinical improvement of AGA with the administration of PRP.

So, there you have it, this is the conclusion of most of the clinical papers that you will find on the subject – we simply need more studies. In answer to the question, does PRP work on hair, I would say yes, but mostly for business purposes.

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Why are so many clinical trials not showing the reality of our findings? Why are patients happy, even if it has no guarantee of success? Patients tend to be happy when presented with new treatment options for a concern which has bothered them for a long time, and which dramatically affects their day-to-day life. They feel better when they are involved in a treatment programme which includes a comprehensive follow-up process. As physicians, we are always seeking out the new 'elixir', the new 'holy grail' for treatment, so are prepared to try the next new thing and we want to convince ourselves that it works, even if we do not know why and cannot prove it adequately.



has also been shown to have many discrepancies. What else do we have to evaluate our results? Pull test results can also change from one month to another, so are not a reliable measure of treatment efficacy. Using a trichogram is a good option, but you must remove a hundred hairs from the scalp of each patient. This is both laborious and disliked by patients, who are already concerned by hair loss, so it is rarely performed. Photo-trichograms can be very precise if counted by hand, but that makes them expensive and most clinics will not employ someone to individually count hairs. If this is performed by a computer, how can we be certain of the accuracy? All these factors make it difficult to adequately study if a treatment modality like PRP is working or not.

cannot really say how we know this, as the available clinical papers have not been well performed, so much of the data sits is really anecdotal and not clinically significant.

Without standard treatment protocols and good methods of evaluation, we are none the wiser. Yet, patients seem to be happy and the treatment is certainly lucrative. That just leaves you with your own conscience so you must decide if you want to offer your patients PRP for hair loss, knowing that you will have to manage their expectations because you simply cannot guarantee the results they will, or will not, achieve.

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It is also worth noting that many patients also believe that their hair falling out is the real cause of their alopecic state. They tend to evaluate differences in hair shedding and think it is part of the treatment, but hair shedding fluctuates. When a patient presents to you with hair shedding, even if you do not treat them, after three months, they will start feeling better because they tend to confuse miniaturisation with hair shedding, and there is no relationship between them. Hair shedding is influenced by factors around the patient, like climate. Patients who embark on a hair loss treatment programme in a malting period tended to enter a non-malting period.

My most recently published study from November 2020 is in the *Journal of the American Academy of Dermatology*, alongside Dr Michael Bigby and specifically explores the lack of evidence of clinically significant improvement in AGA with PRP.<sup>8</sup> We noted that PRP does not follow the FDA's or EU's traditional regulatory pathway that requires animal studies and clinical trials which means that clinical trials have not demonstrated that the results of PRP injection are clinically meaningful. In



Canfield Orthostatic devices show non-reliable results because the patient's hairstyle can change - people cut their hair differently, they use hair dye, and their hairstyle on a given day depends on the wind or humidity outside. Plus, investigator ratings on treatment progression pictures produced by these devices

a systematic review of the use of PRP to treat AGA, the reported data suggests that, even among patients who improve, the potential benefits of PRP may not be clinically significant. Further review noted that results strongly suggest publication bias in the PRP literature. In conclusion, we can probably say that PRP is working to treat hair, but we

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