Platelet-rich plasma associated with hair transplants for the treatment of androgenetic alopecia showed no benefits

Journal:	*Journal of the European Academy of Dermatology and Venereology*
Manuscript ID	JEADV-2019-2618.R3
Manuscript Type:	Letter to Editor
Keywords:	alopecia, hair transplant, PRP

REFERENCES

1. Alves R, Grimalt R. Randomized placebo-controlled, double-blind, half-head study to assess the efficacy of platelet-rich plasma on the treatment of androgenetic alopecia. Dermatol Surg 2016;42:491-7.

2. Uebel CO, da Silva JB, Cantarelli D, Martins P. The role of platelet plasma growth factors in male pattern baldness surgery. Plast Reconstr Surg 2006;118:1458-66.

3. Cervelli V, Garcovich S, Bielli A, Cervelli G, et al. The effect of autologous activated platelet rich plasma (AA-PRP) injection on pattern hair loss: clinical and histomorphometric evaluation. Biomed Res Int 2014; article ID760709. doi: 10.1155/2014/760709.

4. Schiavone G, Raskovic D, Greco J, Abeni D. Platelet-rich plasma for androgenetic alopecia: A pilot study. Dermatol Surg 2014;40:1010-9.

5. Gonshor, A. Technique for producing platelet-rich plasma and platelet concentrate: background and process. Int J Periodontics Restorative Dent 2002;22:546-56.

6. Amable PR, Carias RB, Teixeira MV, da Cruz Pacheco Í, et al. Platelet-rich plasma preparation for regenerative medicine: optimization and quantification of cytokines and growth factors. Stem Cell Res Ther 2013;4:67.

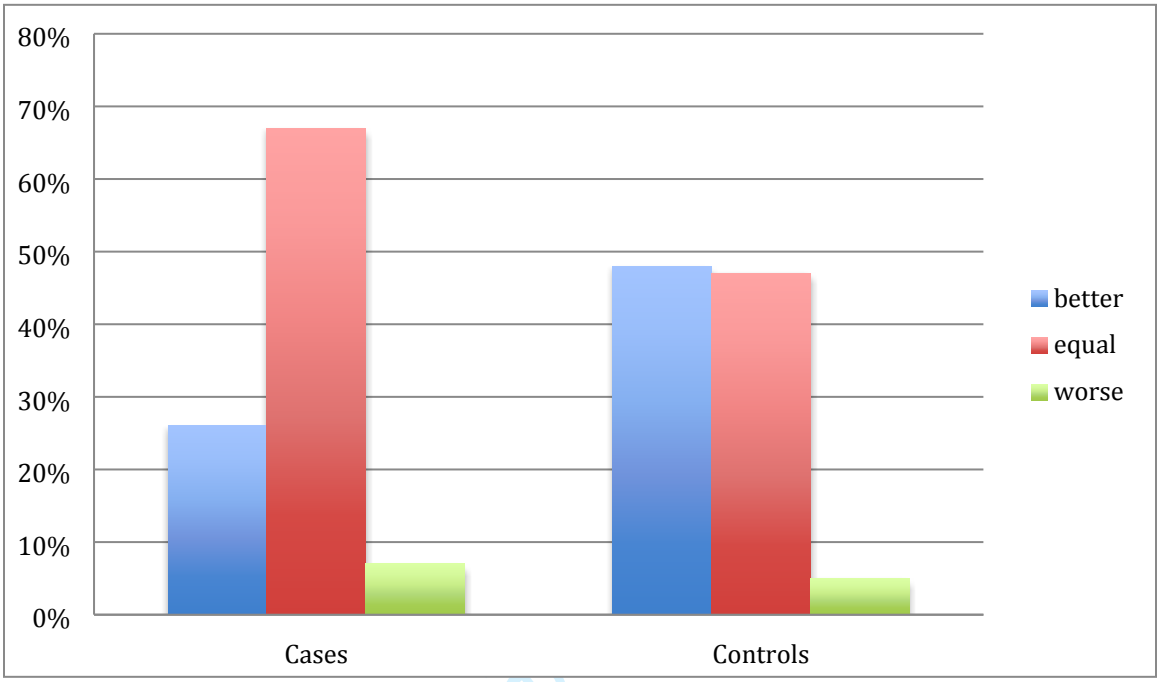
7. Takikawa M, Nakamura S, Nakamura S, Ishirara M, et al. Enhanced effect of platelet-rich plasma containing a new carrier on hair growth. Dermatol Surg 2011;37:1721-9.

8. Maria-Angeliki G , Kouskoukis AE, Tripsianis G, Rigopoulos D, et al. Study of platelet-rich plasma injections in the treatment of androgenetic alopecia through an one-year period. J Cutan Aesthetic Surg 2014;7:213-9.

9. Puig C J, Reese R, Peters M. Double-blind, placebo-controlled pilot study on the use of platelet-rich plasma in women with female androgenetic alopecia. Dermatol Surg 2016;42:1243-7.

10. Marwah M, Godse K, Patil S, Nadkarni N. Is there sufficient research data to use platelet-rich plasma in dermatology? Int J Trichol 2014;6:35-6.

CHART: Comparison of day one and final results



Platelet-rich plasma (PRP) is a platelet concentrate obtained from whole blood centrifugation. The use of PRP in hair transplants (HT)[1,2] has suggested better postoperative recovery with less erythema and crust formation, faster and better growth of transplanted follicular units (FU).[3,4]

A retrospective study was performed evaluating all male patients with AGA who underwent HT using the strip technique (FUT), from March 2013 to March 2016, in the same service in Brazil. Cases were defined as patients receiving PRP (n=169) and who did not receive PRP (n=65), control group.

The study was approved by the Federal University of Paraná Research Ethics Committee.

PRP was prepared using a double-spin technique.[5,6] The mean platelet count in the peripheral blood, evaluated by external laboratory, was $208.1x10^3$/ul before the centrifugations and $1100.8x10^3$/ul in the PRP.

After a supra-orbital anesthetic block, PRP was applied intradermally by nappage technique, using a mean volume of 5.8ml per patient, without activation, since platelets are naturally activated in contact with collagen.[6] The standard HT procedure was then performed with local tumescent anesthesia.

Images were taken with a Nikon D80 camera, using the same illumination and patient positioning, before surgery, first postoperative (PO) day with long hair, 10 to 15 days, 2 to 3 months and 9 to 15 months.

Crusts, erythema and budding of hair were classified into: absent, poor, moderate or abundant. The overall density final result was compared to 1 day PO and evaluated as equal, higher or lower.

Patients who did not attend at the first postoperative and final follow-up (n=50) or with diagnoses other than AGA (n=9) were excluded. There were 175 transplants left for evaluation, 118 patients who received PRP and 57 controls.

Three evaluators reviewed anonymous images and were blinded to the patient treatments. The questionnaires were applied on Google docs®.

Data analysis was performed using Statistical Package for Social Sciences® (SPSS), Fisher's exact test, Chi-square test and Student's T-test. Inter-observer agreement analysis was performed using the Kappa test. Statistically significant differences were considered as $p<0.05$.

The two groups did not show significant differences in age, number of follicles, FUs and medication use (minoxidil, finasteride, 17-alfa-estradiol), except for the anti-dandruff shampoo (ketoconazole or zinc pyrithione). All control patients used versus 91% in the PRP group.

There was no statistical differences between the groups regarding erythema, crusts, effluvium, loss of transplanted hair or budding of transplanted hair.

Final results, compared to long transplanted hair at first PO day, demonstrated 48% of the patients in control group with better than expected result, compared to 26% of the PRP group ($p<0,05$), for all observers. There was no significant difference in "same as" or "worse than" the first PO day in both groups (Figure 1).

One million platelets per cubic microliter is the concentration at which the PRP is expected to have greater clinical efficiency. The mean concentration was 5.4 times the count in whole blood, comparable to other studies.[7,8]

When we started using PRP in our practice, we were very impressed with the results of some of our patients who received a single PRP treatment with FUT. The PRP study in women with female androgenetic alopecia used a single application. Uebel study showed significant results when folicular units were immersed in PRP during HT. Due to our initial results and the published studies of PRP, we only applied PRP one time, during the HT.

Better results in the control group may be justified by the less manipulation of the recipient area. Other studies suggested a positive perception of PRP treatment, even if the photos do not show it.[9,10] However, present study did not confirm it. Further evaluation, with scalp dermoscopy could demonstrate follicular diferences in clinical response.

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Manuscript word count= 610

Table and figure count= 1

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A statement of all funding sources that supported the work
no funding sources