

*Research Article***Combined microneedling and Platelet rich plasma in management of post acne scars: comparative study****Hamza A. Mohamed, Hassan M. Hassan, Ghada A. Nasif and Shaimaa M. Ahmed**

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Abstract

Background: Platelet rich plasma (PRP) contains autologous growth factors, which could act synergistically with growth factors induced by skin needling in order to enhance the wound-healing response. **Aim of the study:** evaluation of the effect of PRP and microneedling in management of post acne scars. **Materials and methods:** 24 patients with post acne scars attending outpatient clinic were offered six sessions of microneedling with PRP on one side and PRP injection on the other side of the face at an interval of 2 weeks. **Results:** 24 patients aged between 18-33 years. Significant improvement was observed with the use of combined PRP plus microneedling in the Lt side of the face as compared to Rt side which was treated with PRP injection alone. Patients were more satisfied with combined microneedling and PRP than PRP injection alone. **Conclusion:** The clinical results of our study showed significant improvement using combination therapy of PRP plus dermaroller and the most significant improvement with PRP plus dermapen as compared to PRP injection.

Keywords: platelet rich plasma, dermaroller, dermapen, post acne scars.

Introduction

Platelet rich plasma (PRP) is an autologous solution of plasma containing 4–7 times the baseline concentration of human platelets (Leo et al., 2015).

Microneedling have shown to start collagen formation and production of healing agents but without removing epidermis and without causing hyperpigmentation (Cho et al., 2008).

Plasma contains autologous growth factors, which could act synergistically with growth factors induced by skin needling in order to enhance the wound-healing response. (Hom et al., 2007).

Materials and methods

Twenty four patients of post acne scars 18 females and 6 males, who attended outpatient clinic of Department of Dermatology, STDs & Andrology, Faculty of Medicine, Minia University. The patients received six sessions of microneedling with PRP on one side and PRP injection on the other side of the face at an interval of 2 weeks. The patients were classified into 2 groups:

Group A: 12 patients treated with PRP injection on the Rt side while combined

microneedling with dermaroller and PRP on the Lt side

Group B: 12 patients treated with PRP injection on the Rt side while combined microneedling with demapen and PRP on the Lt side

For PRP, 20 ml of autologous whole blood was collected into tubes containing acid citrate dextrose (ACD) and centrifuged at 500 rpm for 30 minutes Calcium gluconate was added as an activator (1:9)

Results

The collected data were coded, tabulated and statistically analyzed using SPSS program (Statistical Package for Social Sciences) software version 23.

Group A: 12 patients treated with PRP injection only on the Rt side of the face versus combined procedures of PRP and dermaroller on the Lt side. Their age ranged from 25-32 years (Mean \pm SD = 27.87 \pm 2.47). Nine patients were females (75%) and three were males (25%). The results were significant as regard combined PRP and dermaroller in the Lt side when compared with the Rt side (p value = 0.020).

Table 1: Clinical improvement group (A) of post acne scars on both sides of the face.

Group A	RT side	LT side	p value
Score			
very good	0 (0%)	4 (37.5%)	0.020*
good	2 (12.5%)	6 (50%)	
moderate	4 (37.5%)	2 (12.5%)	
mild	6 (50%)	0 (0%)	

Group B: 12 patients treated with PRP injection only on the Rt side of the face versus combined procedures of PRP and dermapen on the Lt side. Their age ranged from 20-33 years (Mean \pm SD =28 \pm 4.21). Nine patients were

females (75%) and three were males (25%). There was a significant improvement of post acne scars treatment with PRP and dermapen in the Lt side of the face when compared with the Rt side (p value =0.001). **Table 2.**

Table 2: Clinical improvement group (B) of post acne scars on both sides of the face.

Group B	RT side	LT side	p value
Score			
very good	0 (0%)	9 (75%)	0.001*
good	0 (0%)	3 (25%)	
moderate	6 (50%)	0 (0%)	
mild	6 (50%)	0 (0%)	

Discussion

Fabbrocini et al., (2011) showed a split face study done on 12 patients with post acne scars, all patients are treated with combined PRP and dermaroller on one side and the other side treated with dermaroller alone. The results were more significant on the side treated with combined microneedling with dermaroller plus PRP than the side treated with dermaroller alone.

On the other hand the study of Nofal et al., (2014) compared 45 volunteers of post acne atrophic scars equally randomized into three groups to receive either skin needling combined with the topical application of PRP, the focal application of 100% TCA, or intralesional dermal injections of PRP. All three treatments resulted in statistically significant improvements in scar grades with no significant difference in between.

A study by Ibrahim et al., (2017) treated 90 patients with atrophic scars and were classified

randomly into three groups: group I: 28 patients treated with microneedling, one session every 4 weeks; group II: 34 patients treated with intradermal injection of platelet-rich plasma, one session every 2 weeks; and group III: 28 patients treated with alternative sessions of each microneedling and platelet-rich plasma, 2 weeks between each session, for a maximum of six sessions. There was a statistically significant improvement in the appearance of atrophic scars, with reduction in the scores associated with the clinical evaluation scale for atrophic scarring in all groups, but the improvement was more obvious in group III (combined PRP plus dermapen).

Conclusion

Our study concluded that PRP is safe and effective. The clinical results of our study showed significant improvement with the use of PRP as a monotherapy (p value 0.001), more significant improvement using combination therapy of PRP with dermaroller (p value =

0.020) and the most significant improvement with PRP plus AMD (p value = 0.001).

References

1. Cho SB, Lee SJ, Kang JM, Kim TY and Kim DH (2008): The treatment of burn scar induced contracture with the pinhole method and collagen induction therapy: a case report. *J Eur Acad Dermatol Venereol.*22: 513.
2. Fabbrocini G, De Vita V, Pastore F, Monfrecola A, Fardella N and Cacciapuoti S (2011): The use of skin needling for eutectic mixture of local anesthetics delivery. *G Ital Dermatol Venereol.*; 149(5):581-585.
3. Hom DB, Linzie BM and Huang TC (2007): The healing effects of autologous platelet gel on acute human skin wounds. *Arch Facial Plast Surg.* 9:174-183.
4. Ibrahim MK, Ibrahim SM and Salem AM (2017): Skin microneedling plus platelet-rich plasma versus skin microneedling alone in the treatment of atrophic post acne scars: a split face comparative study.
5. Leo MS, Kumar AS, Kirit R, Konathen R and Sivamani RK (2015): Systematic review of the use of platelet-rich plasma in aesthetic dermatology. *J Cosmet Dermatol.*; 14(4):315-23.
6. Nofal E, Helmy A, Nofal A, Alakad R, Nasr M (2014): Platelet-rich plasma versus CROSS technique with 100% trichloroacetic acid versus combined skin needling and platelet rich plasma in the treatment of atrophic acne scars: a comparative study ; 40(8):864-73.