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Microneedling with autologous platelet-rich plasma versus microneedling with topical insulin in the treatment of postacne atrophic scars: A simultaneous split-face comparative study



To the Editor: Postacne atrophic scars (PAS) are common sequelae of acne.¹ Peels, platelet-rich plasma (PRP), subcision, dermabrasion, lasers, punch techniques, and fillers are useful in PAS; however, many of them are associated with dyspigmentation and scarring, limiting their widespread

use, especially in skin-of-color populations.¹ Microneedling is safer in skin-of-color populations and is often combined with PRP for enhanced efficacy.^{2,3} However, PRP therapy is costly and not readily available.³

We conducted a split-face comparative study of microneedling with PRP on the left side and microneedling with topical insulin (TI) on the right side for PAS after obtaining institutional ethical clearance from the Dr. Vasantrao Pawar Medical College, Hospital & Research Center. The study enrolled 16 (9 women, 7 men) treatment-naïve patients with PAS, with an average age of 24.69 ± 10.3 years (range, 18-35 years) and Fitzpatrick skin types IV to VI, after providing written consent. Exclusion criteria included presence of active acne or infections, or both, over the face, pregnancy or lactation, currently taking isotretinoin, and history of keloidal tendency, bleeding disorders, and deranged blood glucose levels.

Under antiseptic measures and topical anesthesia, microneedling, using a dermaroller with 1.5-mm length and 192 needles on a roller drum, was performed in a standard manner on both sides of the face. On the right side of the face, 1 to 2 mL of TI (Human Actrapid Insulin, 40 IU/L solution; Novo Nordisk India Pvt Ltd, Bangalore, India) was applied, while on the left side, 1 to 2 mL of autologous PRP, prepared using the standard method, was applied. An ice pack was applied over the treated areas, and the face was cleaned after 30 minutes.

Preprocedure and postprocedure blood glucose levels were measured. Adverse effects were noted. Patients were advised to follow photoprotective measures. All patients received 4 microneedling sittings at monthly intervals and were monitored until 3 months after the last sitting. The qualitative Global Acne Scarring System was used to compare treatment-associated improvement.

Of 16 patients, 14 completed the study. Intention-to-treat analysis of scores was conducted. The right side of the face showed 45% improvement, and left side showed 26% improvement in PAS (Fig 1). A paired *t* test showed significant improvement in both the right side ($t = 12.20$, $P = .01$) and left side of the face ($t = 2.67$, $P = .03$). An unpaired *t* test showed comparable improvement in both sides of the face; however, ice pick and boxcar scars responded better to TI therapy (Supplemental Table I, available via Mendeley at <https://doi.org/10.17632/ct47f5gbnc.1>). Results were sustainable until the last follow-up.

Adverse effects included transient erythema ($n = 8$), pain ($n = 6$), and edema ($n = 3$); however, there was no dyspigmentation or scarring. We did not observe any changes in blood glucose levels.

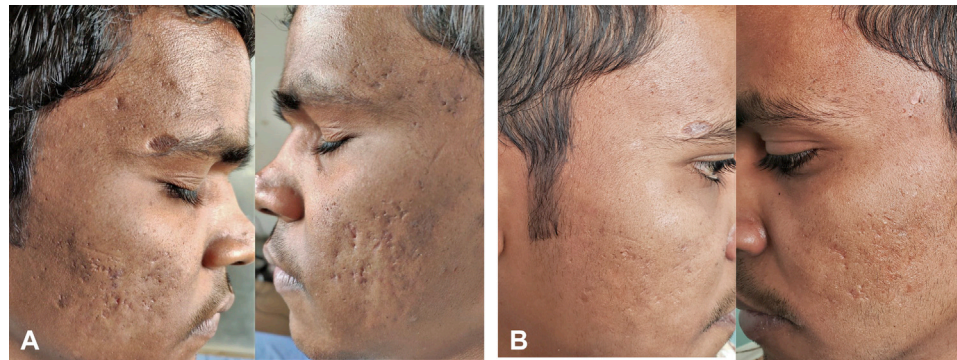


Fig 1. **A**, Multiple postacne atrophic scars on both sides of the face. **B**, Significant improvement on both sides of the face after microneedling with topical insulin (*right side*) and microneedling with platelet-rich plasma (*left side*).

In a mature PAS, type I collagen predominates more than type III.¹ After microneedling, collagen is deposited in the normal lattice pattern, while growth factors of PRP augment the healing of PAS.^{2,3} TI activates of phosphatidyl inositol 3-kinase (PI3K)/protein kinase B (Akt) pathways to increase vascular endothelial growth factor.⁴ After TI, increased synthesis and maturation of collagen fibers, chiefly type III, occurs in a basket weave-like organization (normal skin) rather than in a crisscross manner (scar).⁵ Thus, PRP or insulin with microneedling augments the improvement in PAS.

The small sample size, lack of a separate assessment of each treatment modality, and short-term follow-up are limitations of our study. Use of a sophisticated vehicle for optimal delivery of insulin is desirable.

TI and PRP, combined with microneedling, may both achieve improvement, with an advantageous safety profile in PAS of skin-of-color populations. However, ready accessibility, low cost, and the noninvasive nature merits the use of TI over PRP. Further studies with a large sample size with histologic evaluations are needed to substantiate the efficacy of TI in PAS.

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Utilization of immunotherapy among patients with stage 4 melanoma: An analysis of the National Cancer Database from 2012 to 2016



To the Editor: Immunotherapy offers unprecedented chances of sustained remission in stage 4 melanoma.¹ However, because of cutaneous adverse