



Figure 8: The case of a 28-year-old man with rolling scars treated with platelet-rich plasma and nanofat injection. (A) preoperative situation; (B) 3 months after the second treatment

stimulate the self-regeneration. The results obtained from the measurement of the thickness do not show evident differences in group A [Figures 5 and 6] and in group B [Figures 7 and 8], therefore the use of dermabrasion does not bring change in the aesthetic result. The surface treatment of atrophic scars is therefore not the best treatment to get good results. Into the 2 groups, we did not notice any difference between the various patients, nor according to the type of scars (icepick, boxcar or rolling), nor on the basis of the initial thickness of the scars. Indeed, we have calculated the differences of thicknesses obtained after treatment in group A and in group B and we applied a *t*-test for unpaired data with a non-significant result ($P = 0.7289$). All patients in both groups had a treatment benefit. Through our questionnaire we were able to know the patients' point of view, both before and after treatment and we could find in all a great improvement in the perception of its image. All patients were highly motivated to perform the treatment, both those with severe scars and those with milder scars. We report the results of the questionnaire into a single table because there was no difference between the 2 groups. The questionnaires which we administered to the patients were collected and processed in anonymous form so it was only possible to compare the responses obtained from each group of patients without being able to be divided into subgroups according to age, gender, type of scars. For the future, we would like to assess the stability of postoperative results with a longer follow-up and the effects of nano-fat plus PRP through histological analysis (cutaneous biopsies during the treatment) on a short and long time. Also, we would like to use 2 other comparison groups, one with the use of only nanofat and 1 only with the use of PRP to study the role of the nanofat and the PRP in the treatment of atrophic scars.

In conclusion, combined approach with nanofat, PRP and CO₂ laser seems to be effective to improve atrophic scars, however, infiltration alone proved to significantly increase skin and subcutaneous tissue thickness. QoL-Q confirmed the impact of acne scars on the face in social life and relationships. All patients, regardless of age, social class or educational level, are highly motivated to perform the treatment because they have not found a solution in previous treatments or have not performed any treatment yet.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Basta-Juzbašić A. Current therapeutic approach to acne scars. *Acta Dermatovenerol Croat* 2010;18:171-5.
2. Tonnard P, Verpaele A, Peeters G, Hamdi M, Cornelissen M, Declercq H. Nanofat grafting: basic research and clinical applications. *Plast Reconstr Surg* 2013;132:1017-26.
3. Anitua E, Sánchez M, Orive G, Andía I. The potential impact of the preparation rich in growth factors (PRGF) in different medical fields. *Biomaterials* 2007;28:4551-60.
4. Barrientos S, Stojadinovic O, Golinko MS, Brem H, Tomic-Canic M. Growth factors and cytokines in wound healing. *Wound Repair Regen* 2008;16:585-601.
5. Phothong W, Wanitphakdeedecha R, Sathaworawong A, Manuskiatti W. High versus moderate energy use of bipolar fractional radiofrequency in the treatment of acne scars: a split-face double-blinded randomized control trial pilot study. *Lasers Med Sci* 2016;31:229-34.
6. Zhou BR, Zhang T, Bin Jameel AA, Xu Y, Xu Y, Guo SL, Wang Y, Permatasari F, Luo D. The efficacy of conditioned media of adipose-derived stem cells combined with ablative carbon dioxide fractional resurfacing for atrophic acne scars and skin rejuvenation. *J Cosmet Laser Ther* 2016;18:138-48.
7. Min S, Park SY, Yoon JY, Suh DH. Comparison of fractional microneedling radiofrequency and bipolar radiofrequency on acne and acnes scar and investigation of mechanism: comparative randomized controlled clinical trial. *Arch Dermatol Res* 2015;307:897-904.
8. Seidel R, Moy RL. Improvement in atrophic acne scars using topical synthetic epidermal growth factor (EGF) serum: a pilot study. *J Drugs Dermatol* 2015;14:1005-10.
9. Frank W. Therapeutic dermabrasion. Back to the future. *Arch Dermatol* 1994;130:1187-9.
10. Alster TS, West TB. Resurfacing of atrophic facial acne scars with a high-energy, pulsed carbon dioxide laser. *Dermatol Surg* 1996;22:151-4.
11. Ramesh M, Gopal M, Kumar S, Talwar A. Novel technology in the treatment of acne scars: the matrix-tunable radiofrequency technology. *J Cutan Aesthet Surg* 2010;3:97-101.
12. Alam M, Omura N, Kaminer MS. Subcision for acne scarring: technique and outcomes in 40 patients. *Dermatol Surg* 2005;31:310-7.
13. Fabbrocini G, Annunziata MC, D'Arco V, De Vita V, Lodi G, Mauriello MC, Pastore F, Monfrecola G. Acne scars: pathogenesis, classification and treatment. *Dermatol Res Pract* 2010;2010:893080.
14. Johnson WC. Treatment of pitted scars: punch transplant technique. *J Dermatol Surg Oncol* 1986;12:260-5.
15. Lee JB, Chung WG, Kwahck H, Lee KH. Focal treatment of acne scars with trichloroacetic acid: chemical reconstruction of skin scars method. *Dermatol Surg* 2002;28:1017-21.
16. Wang F, Garza LA, Kang S, Varani J, Orringer JS, Fisher GJ, Voorhees JJ. In vivo stimulation of de novo collagen production caused by cross-linked hyaluronic acid dermal filler injections in photodamaged human skin. *Arch Dermatol* 2007;143:155-63.