

LETTER TO THE EDITOR

Non-insulated microneedle fractional radiofrequency for the treatment of scars and photoaging

Editor

First described by Manstein and Anderson,¹ fractional techniques have revolutionized the management of numerous dermatological conditions, leading to the development of fractional lasers^{2,3} and fractional radiofrequency devices.^{4,5,6}

A retrospective study was carried out on consecutive patients treated with a non-insulated microneedle fractional radiofrequency (NIMFRF) device: Secret™ (Ilooda, Suwon-si, Korea). All patients paid for their treatments. Inclusion criterion was

indication for thermal remodelling. Exclusion criteria were recent scars (<3 months), keloid, pregnancy or breast-feeding, refusal of a post-treatment assessment. Treatment parameters were as follows: energy 60% (6.82 Watt), depth set as a function of the dermal thickness (between 1 and 2.5 mm), pulse duration (ms): 100 times the depth (mm), needle penetration duration: twice the duration of the pulse. Anaesthetic cream (Anesderm; Pierre Fabre, Boulogne, France) was applied before the session. Antiseptic treatment was performed just before the session. Patients were treated with 50% overlapping in two consecutive passes. Five passes were carried out on microrelief zones. Cicabio (Bioderma, Lyon, France) was applied immediately after the treatment and prescribed. No other treatment – especially antiviral or antibacterial – was prescribed.

Tolerance was assessed using a 10-point pain score, measurement of the most frequent subsequent effects and screening for



Figure 1 Improvement of acne scars. Surgical scar and Periorbital/nasolabial rhytids after NIMRF Secret™.

Table 1 Results : Side effects, Efficacy and Satisfaction of NIMRF Secret™

Phototype	Indication	Sessions	Pain (/10)	Erythema (days)	Crusts (days)	Oedema (days)	Efficacy (patient) (/10)	Satisfaction (patient) (/10)	Efficacy (physician) (/10)	Commentary
1 5	Atrophic scar (face)	3	3	0	0	0	5	5	4	Improvement of post-inflammatory hyperpigmentation
2 4	Acne scar (face)	1	5	7	0	0	5	5	7	Improvement of post-inflammatory hyperpigmentation
3 3	Photoageing (face)	1	4	0	3	7	8	10	8	
4 2	Burn scar (leg)	1	5	4	0	0	3	5	4	
5 4	Acne scar (face)	1	3	0	0	2	4	8	6	
6 4	Atrophic scar (face)	3	7	0	0	1	2	3	4	Improvement of post-inflammatory hyperpigmentation
7 4	Acne scar (face)	1	5	2	7	7	6	8	7	
8 2	Photoageing (face)	1	5	0	0	3	7	8	5	
9 2	Atrophic scar (face)	2	4	0	5	0	7	7	7	
10 2	Frontal rhytids	1	5	5	7	0	7	8	6	Improvement of acne
11 2	Acne scar (face)	1	6	7	0	0	7	7	8	
12 1	Photoageing (face)	2	5	2	0	0	5	7	5	
13 4	Atrophic scar (face)	1	6	3	0	0	7	7	7	
14 2	Surgical atrophic scar (face)	3	4	0	5	0	7	7	5	
15 2	Atrophic scar (arm)	1	7	14	10	7	6	7	7	
16 4	Atrophic scar (arm)	1	3	5	2	1	8	9	8	
17 2	Surgical atrophic scar (face)	4	6	2	0	2	6	7	9	
18 2	Photoageing (face)	3	6	2	4	1	3	6	7	
19 2	Acne scar (face)	1	5	0	5	0	5	8	6	
20 2	Photoageing (face)	1	7	1	0	0	8	8	5	
	Average	1.65	5.05	2.70	2.40	1.55	5.80	7.00	6.25	
	Standard deviation	0.99	1.28	3.56	3.14	2.50	1.77	1.59	1.48	

complications. Patients were examined 1 month after the last session. Efficacy and patients' satisfaction were assessed using a 10-point score. Efficacy was also evaluated by a physician on a 10-point score, measuring global improvement on skin texture, depending on the condition treated.

Twenty patients were recruited. Indications were photoagings, atrophic, burn and acne scars. Thirty-five percentage of patients had a dark phototype. Mean efficacy was assessed at 6.25/10 (± 1.5) by the physician and at 5.8/10 (± 1.8) by the patients. Patient satisfaction scored 7/10 (± 1.6). Erythema, scabs of small diameter, and oedema were reported in 60%, 45% and 45% of cases respectively. No infections, scarring or pigmentary complication was reported. Detailed results are displayed in Table 1.

The microneedle radiofrequency is a very popular technique in Asia.^{5,6} To our knowledge, this is the first European study. According to some authors, the satisfaction criterion is the single most important consideration in the choice of an energy-based device treatment.⁷ The commercial dimension helps eliminate bias that may occur in patient satisfaction evaluation. The mean satisfaction of the NIMFRF-treated patients was very high. This can be explained by the visible post-treatment results that are comparable to fractional lasers (Fig. 1), but better tolerated and associated with significantly less down time. The balance between efficacy and a well-tolerated procedure was therefore highly favourable. Treatment depths could explain different side-effects: erythema and scabs for superficial treatments, oedema for deeper treatments. No pigmentary complication has been reported despite the treatment of darker phototypes, and is consistent with the theoretical supposition that this modality is suitable for all skin phototypes. On the contrary, three patients treated reported improvement of post-inflammatory hyperpigmentation after NIMFRF treatment. Improvement in pigmentary conditions has been previously reported with fractional lasers.⁸ No infectious complication was reported despite the absence of antibiotic and antiviral treatment. This aspect is another advantage over the CO₂ fractional laser, which can have an infection rate of up to 9%, despite antiviral pre-medication.⁹ Nevertheless, NIMFRF could also be combined with CO₂ fractional lasers to optimize results, as demonstrated in the

treatment of stretch marks.⁶ The efficacy was similar for both indications (scar and photoaging), thus confirming the versatility of the technique and its efficacy in the main dermal remodelling indications. In conclusion, our study shows that the NIMFRF is efficacious in treating scars and photoaging, with the advantages of minimal post-treatment effects and very high patient satisfaction, in real-life clinical setting.

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