

# TwinLight rejuvenation technique (Nd:YAG+Er:YAG) vs Er:YAG resurfacing alone: a comparative study

Leonardo Marini

*The Skin Doctors' Center, Via dei Bonomo 5/a, Trieste, Italy*

## SUMMARY

### BACKGROUND

Photo-thermal ablative and non-ablative fractional resurfacing and remodeling have become extremely popular due to the lower rate of complications and side effects compared to conventional full-face procedures. Clinical results are nevertheless quite different and have prompted researchers to find new strategies to improve treatment outcomes. Sequential laser layering techniques have been successfully used in PWS and more recently in anti-aging procedures with good clinical results. Since temperature seems to play a key role in stimulating neo-collagen and extracellular matrix production when properly increased in different skin layers, in this study we wanted to examine clinical and histologic results after applying the TwinLight rejuvenation technique, a non-ablative, sequentially layered, 1064 nm Nd:YAG laser bulk heating, immediately followed by two passes of ablative 2940 nm Er:YAG laser in a fractional mode (55 subjects). The TwinLight results were compared with two passes of ablative 2940 nm Er:YAG laser in a fractional mode (45 subjects).

### OBJECTIVE

Our purpose was to study the immediate and delayed photo-thermal effects induced by two different laser procedures comparing clinical and histologic results.

### STUDY DESIGN

Two groups of Fitzpatrick skin type II-III subjects affected by mild photo- and chrono-aging (group A: n. 55, 38-60 yrs, mean 45; group B n. 45, 40-62 yrs, mean 48) were enrolled in our study. Treatment protocols were discussed and informed consent obtained. A full-face nerve block was performed in all subjects. Group A was treated with a sequence of short and long 1064 nm Nd:YAG laser (0.3 ms-35 J/cm<sup>2</sup>-scanner operated 3 mm spot followed by 35 ms-50 J/cm<sup>2</sup> scanner-operated 3 mm spot) immediately followed by two 2940 nm Er:YAG laser passes in a fractional mode (600 μsec – 12 J/cm<sup>2</sup> scanner-operated 0.25 mm spot); Group B was treated with two 2940 nm Er:YAG laser passes in a fractional mode (600 μsec-12 J/cm<sup>2</sup> scanner-operated 0.25 mm spot). Standardized clinical photographs were taken (D0-D+30-D+60-D+90).

Clinical pictures were blindly evaluated by two dermatologists. 3 mm punch BX were taken from the pre-auricular crease at D+30 and D+90 (Group A n. 15;

Group B n. 12). A blue marking identified the non-treated side. All specimens were placed in 10% buffered formaline and further processed histologically with conventional Hematoxylin Eosin stain by the same dermatopathology lab. Histologic sections were taken perpendicularly to the blue markings. Photomicrographs of each slide were taken at scanning magnification and 10X on the blue and non-blue sides. A histologic evaluation was blindly performed by a dermatopathologist. A self-evaluation post-op clinical diary was given to all subjects.



Fig. 1: 3mm BX punch

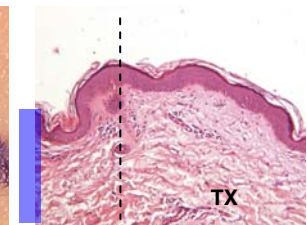


Fig. 2: HE D+90 G-A

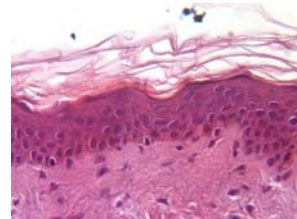


Fig. 3: HE D+30 G-A-TX

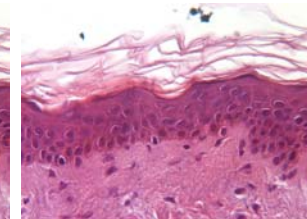


Fig. 4: HE D+90 G-A-TX



Fig. 5: D-0 G-A



Fig. 6: D+30 G-A



Fig. 7: D+60 G-A



Fig. 8: D+90 G-A



Fig. 9: 3mm BX punch

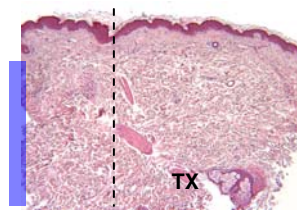


Fig. 10: HE D+90 G-B

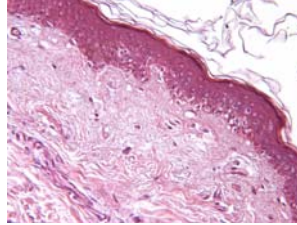
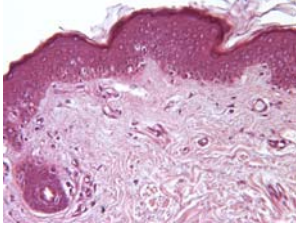


Fig. 11: HE D+30 G-B-TX Fig. 12: HE D+90 G-B-TX

## RESULTS

Blind evaluation of clinical photographs by two dermatologists obtained a 90% concordance level. Overall clinical improvement was considered higher (37%) in Group A compared to Group B subjects. Group A also showed better improvement of epidermal dyspigmentation (25%); rhytides (35%); and skin laxity (38%) when compared to Group B at D+90. Positive rearrangement of collagen fibers was found more prominent (32% D+90); flattening of rete ridges more evident (20% D+90); and epidermal thickness positive rearrangement more pronounced (30% D+90) in Group A. Intra-operative and immediate post-operative symptomatology acceptability reported by patients was 85% in Group A and 87% in Group B. Subjective clinical perception of overall skin improvement at D+90 was higher (78%) in Group A than in Group B (62%). Both Groups confirmed their willingness to repeat their procedures to progressively reach and/or maintain a good level of anti-aging effect.

## CONCLUSIONS

The TwinLight rejuvenation technique, the sequential combination of short- and long-pulse 1064 nm Nd:YAG scanner-assisted layered bulk heating followed by 2940 nm fractional laser resurfacing showed to be clinically and histologically superior to 2940 nm fractional resurfacing alone. More studies are needed to assess the effects of different sequences of laser wavelengths to optimize the concept of this novel technique.