

Combining Fractional Er:YAG and Q-Switched Lasers for Tattoo Removal

Leonardo Marini

The Skin Doctor's Center, Trieste, Italy

SUMMARY

In recent years tattooing has become fashionable, and the incidence of tattooed individuals is constantly increasing. Additionally, with increased number of tattooed individuals, there is also an increased desire for tattoo removal.

Conventional Q-S laser-assisted tattoo removal is presently considered the gold standard procedure[1]. Recently, innovative new tattoo removal strategies have been proposed to improve intradermal pigment clearing efficacy [2,3].

By adding an ablative 2940 nm Er:YAG fractional resurfacing treatment (SP Dynamis, Fotona, Slovenia) prior to the R20 sequence, we were able to reduce the inter-laser pass time intervals to 5 minutes (saving 15 minutes for each subsequent Q-S pass).

We demonstrated that ablative 2940 nm Er:YAG laser fractional priming followed by two Q-S 1064 nm laser passes was faster and more effective than conventional Q-S laser tattoo removal (Fig.1). Treatment of multi-colored tattoos with Er:YAG + Q-S Nd:YAG also revealed a relative color-blindness.



Fig 1: 3 months after 1st (A) 2nd (B) 3rd (C) combined treatments. The right half of the tattoo was treated with Q-S Nd:YAG alone

After proving the benefits of Er:YAG ablative fractional priming, we evaluated the contribution of multiple Q-S passes (our experience is that 4 passes as prescribed by the R20 technique is too aggressive).

Eleven Fitzpatrick I-II patients with an average age of 32.4 years and with 11 professional tattoos (6 monochromatic; 5 polychromatic) were included in this pilot study. The tattoos were divided into two halves. The whole tattoo was firstly treated with ablative fractional Er:YAG and then the first half of the tattoo was treated with 2 passes of Q-S 1064 nm

Nd:YAG (5 min inter-pass interval) and the other half was treated with 3 passes of Q-S Nd:YAG.

Three Q-S 1064 nm laser passes showed little advantage over the two passes technique, so our proposal for a novel tattoo removal technique would be to utilize two Q-S passes after ablative fractional Er:YAG priming.

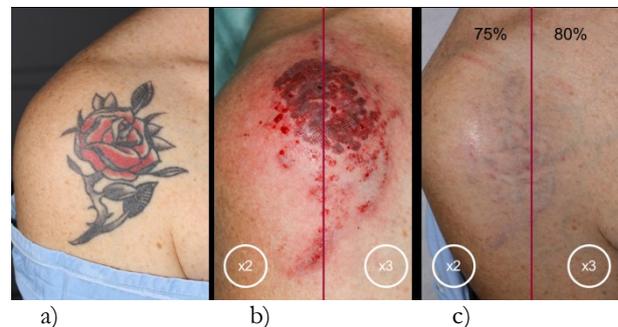


Fig. 2: Example of a combined, split-tattoo treatment of a multicolor tattoo: a) Virgin tattoo (before); b) immediately after the combined treatment where the left half (x2) of the tattoo had two passes and the right half (x3) had three passes; c) results after three sessions: 75% clearance on the left (x2) vs. 80% clearance on the right (x3).

To perfectly understand the therapeutic contribution of each of the two subsequent steps involved in this innovative procedure, more studies are needed.

REFERENCES

1. Kent KM, Graber EM (2012) Laser tattoo removal: a review. *Dermatologic surgery* : official publication for American Society for Dermatologic Surgery [et al] 38: 1–13.
2. Kossida T, Rigopoulos D, Katsambas A, Anderson RR (2012) Optimal tattoo removal in a single laser session based on the method of repeated exposures. *Journal of the American Academy of Dermatology* 66: 271–277.
3. Ibrahim OA, Syed Z, Sakamoto FH, Avram MM, Anderson RR (2011) Treatment of tattoo allergy with ablative fractional resurfacing: a novel paradigm for tattoo removal. *Journal of the American Academy of Dermatology* 64: 1111–1114.

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