

# Spotless Multilayer Laser Rejuvenation

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## SUMMARY

**Background:** Premature aging is very often heralded by irregularly distributed, blotchy pigmentations, micro-textural alterations and more evident dynamic wrinkles. Age and environmental factors work together to progressively worsen skin quality and function, particularly on sun-exposed areas. There is no single treatment, except for deep chemical peels and full-face ablative laser resurfacing, that is able to simultaneously address all signs of aging. Deep peels and deep photo-thermal resurfacing require long recovery times and might be associated with potentially important side effects and serious complications. Modern dermatologic strategies try to sequentially combine different technologies and procedures to concentrate their positive effects just on the alterations they can treat at their best without pushing too hard on skin tissues. This kind of approach can generate a “gentler” yet effective rejuvenation without asking patients too much in terms of down-time, post-operative pain, side effects, and complications. Irregular skin pigmentation is perceived by observers as a clear sign of aging, therefore, all multi-layer rejuvenation procedures should aim at producing “spotless” textural and functional improvements. We have developed a complex, yet reliably reproducible, multilayer procedure consisting of a series of photo-thermal, photo-acoustic, and chemical passes, each with a specific aim: trans-epidermal short- and long-pulse 1064 Nd:YAG laser to stimulate dermal fibroblasts and activate HSPs; gentle 532 nm Q-S laser to eliminate unattractive superficial hyperpigmentations; 500-950 nm spectral band IPPL to optimize color uniformity; ablative/non ablative fractional 2940 nm Er:YAG to induce a controlled micro-wounding of epidermal keratinocytes; 15-20% TCA chemical peel to “seal” all positive growth factors and pro-healing cytokines under a “micro-coat” of precipitated proteins. No anatomical limitations and acceptable post-treatment downtime make spotless multilayer laser rejuvenation an ideal strategy to effectively rejuvenate the skin.

**Study:** 20 subjects, 45-80 years of age, Fitzpatrick phototype II-III, affected by premature aging underwent one full spotless multilayer laser treatment on facial and dorsal hand regions. Treatments were

performed with 1064 nm Nd:YAG Dynamis SP (Fotona, Slovenia) with FRAC3 (S11 scanner 6 mm spot) and Piano mode (R34 handpiece 1.5 sec., 38-42 J/cm<sup>2</sup>, 20 mm) with non-contact chilled air cooling (Zimmer Cryo5 - setting 5), followed by 532 nm QS laser QX MAX (Fotona, Slovenia) 3-4 mm spot, 0.9-1.2 J/cm<sup>2</sup>, 4-5Hz, followed by 500-950 nm IPPL Photosilk plus (Deka, Italy), followed by 2940 nm Er:YAG Dynamis SP (Fotona, Slovenia) with F-Runner 5%, SP, 10 J/cm<sup>2</sup>, 10 Hz, and 15-20% TCA chemical peel. Post-operative primary dressing was performed with Stratamed sterile silicone gel (Stratapharma, Switzerland). Standardized digital photographs were taken at baseline, 1 month and 3 months. Subjects were evaluated for improvements in skin pigmentation, texture, wrinkle reduction (rating scale 1-5, 1=no effect, 5=excellent).

**Results:** Highly significant improvements were observed regarding pigmentary alterations, skin texture and micro-wrinkling in all treated subjects. Mean post-op recovery time was 4-6 days on facial skin and 10-15 days on dorsal skin regions. No scarring and/or infections were observed.

**Conclusion:** A multilayer sequential combination of short- and long-pulse non-ablative laser, QS photo-acoustic selective micro-ablation, IPPL, ablative fractional micro-resurfacing, and light TCA chemical peel can safely and effectively improve premature aging in a spotless mode.

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