FRACTIONAL ABLATIVE LASER VERSUS FRACTIONAL ABLATIVE AND COAGULATIVE LASER FOR TREATMENT OF PHOTODAMAGED SKIN IN ARMS AND FOREARMS

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SUMMARY: Photodamaged skin in arms and forearms are a common concern in dermatologic offices around the world. Most used treatment options may include topical creams, peelings and non-ablative fractional LASERs, which presents mild to moderate results. On the other hand, ablative LASER systems have shown to achieve the best results and treatment satisfaction also. However, main issue regarding ablative LASERs systems relies on extra-facial areas, once risk of adverse effects caused are significantly increased.

The role of this present study is to compare both the effects of a fractional pure-ablative LASER versus a fractional ablative/coagulative LASER to treat photodamaged skin in arms and forearms, by using low energy dosis in order to prevent side effects.

Twenty patients have received a pure-ablative fractional LASER treatment (also known as *single mode* LASER) in one arm and forearm, and in the other arm and forearm a combination of both ablative/coagulative LASER treatment (also known as DualMode® LASER). Both sides have been treated with a single pass by using a 2940 nm Er:YAG fractional LASER (ETHEREA® 2940 DualMode®, INDUSTRA® Technologies, Brazil), for each patient receiving 2 treatment sessions with 1 month in-between sessions. In single mode 500us pulse width with 10 mJ/MTZ energy was used, and 500us/3ms pulse width with 10 mJ/MTZ and 30 mJ/MTZ energy values for tx in DualMode®. Patients were submitted to a skin biopsy prior to treatment, 1 month after the first and the second treatment session, and 3 months later to the second treatment sessuib. Clinical pictures were taken and recorded for pre-treatment and 3 months post-treatment.

50% of the patients have preferred results obtained in DualMode® treatment sessions. Pain was related to be more intense in this side in all treated patients, as well. All patients noted a clear improvement of skin in both treated sides. Biopsy has shown an epidermal and dermal collagen thickening after treatments, but a more prominent result were observed in DualMode® treated areas. No side effects were noticed in any of chosen and related treatment options.

The use of low energy of fractional pure-ablative and fractional ablative/coagulative LASER are a safe and effective treatment option to treat photodamaged skin in arms and forearms.

BACKGROUND AND OBJECTIVES: A plethora of treatment modalities have been attempted to treat photodamaged skin in arms and forearms, but to date ablative LASERs treatment has been shown to produce a clinically more effective results in many studies. Fractional tissue ablation offers many potential benefits of a whole-surface ablative skin resurfacing, while minimizing adverse effects as well. Er:YAG LASER at 2940 nm wavelength offers a precise tissue ablation with slightly combined coagulative skin damage. DualMode® technology, which combines both hot and cold Erbium fractional ablation and coagulation, also increases Residual Thermal Damage (RDT) in treated tissue while stimulating neocollagenasis with reduced risk and downtime, specially when compared to another existing and commonly used LASER methods.

This present study intend to evaluate and compare the clinical efficacy of fractional pure-ablative LASER versus fractional ablative/coagulative LASER systems for the treatment of photodamaged skin in arms and forearms, by using low energy dosis in order to prevent side effects.

STUDY DESIGN AND METHODS: Twenty women with moderate to severe photodamaged skin in arms and forearms, including elastosis and lentigines, aged 39-76 years old, Fitzpatrick Phototype I-III, were selected for this study. 1 of the 20 patients withdrew for non-declared personal reasons.

All patients has received a pure-ablative fractional LASER treatment (also known as *single mode* LASER) in one arm and forearm, and in the other arm and forearm a combination of both ablative/coagulative LASER treatment (also known as DualMode® LASER). Both sides have been treated with a single pass by using a 2940 nm Er:YAG fractional LASER (ETHEREA® 2940 DualMode®, INDUSTRA® Technologies, Brazil), for each patient receiving 2 treatment sessions with 1 month in-between sessions. In single mode 500us pulse width with 10 mJ/MTZ energy was used, and 500us/3ms pulse width with 10 mJ/MTZ and 30 mJ/MTZ energy values for tx in DualMode®. All patients have tolerated the whole treatment sessions, but pain was more significantly intense in single mode treated side, as referred.

Patients were submitted to a skin biopsy prior to treatment, 1 month after the first and the second treatment session, and 3 months later to the second treatment session. Collected samples were fixed in formalin for serial sectioning and staining with *Verhoeff* in preparation for histologic

TABLE 1: Parameters and Treatment Guidelines

number of passes	SINGLE MODE
energy	10 mJ/mtz
pulse width	500 µs
spot size	Ø8 mm
energy density	100 mtz/cm^2

number of passes	DUALMODE®
energy	10 mJ/mtz and 30 mJ/mtz
pulse width	500 µs and 3 ms
spot size	Ø8 mm
energy density	100 mtz/cm^2

RESULTS AND CONCLUSION: All twenty subjects have well tolerated the procedure, and a mild to moderate discomfort during treatment was noticed.

Clinical observations and histology findings do also demonstrates that fractional ablative/coagulative 2,940 nm Er:YAG LASER treatment has provided a considerable improvement of photodamaged skin and patient satisfaction. 50% of the patients have preferred results obtained in DualMode® treatment sessions. Main advantage of DualMode® technology for fractional Er:YAG LASERs systems is to provide a full-controlled ablation/coagulation levels in target-tissue, which results in fewer complications and side effects, while improving safety and downtime shortening after each treatment session. There is also minimal to no risk of scarring or hypopigmentation of skin. All patients have noticed a clear improvement in both treated sides. Clinical observations and histological studies also demonstrates a faster tissue re-epithelization and limited adverse side effects.

Biopsy has shown an epidermal and dermal collagen thickening after both treatments, but a more prominent results have been observed in DualMode® treated areas. Collagen fibers were intensily (re)grouped in a more significantly organized arrangement in patients treated with DualMode® LASER system. No side effects were noticed in any of chosen and related treatment options.

This present study demonstrates the safe and effective use of low energy of fractional pure-ablative and fractional ablative/coagulative LASERs as a treatment option for photodamaged arms and forearms.

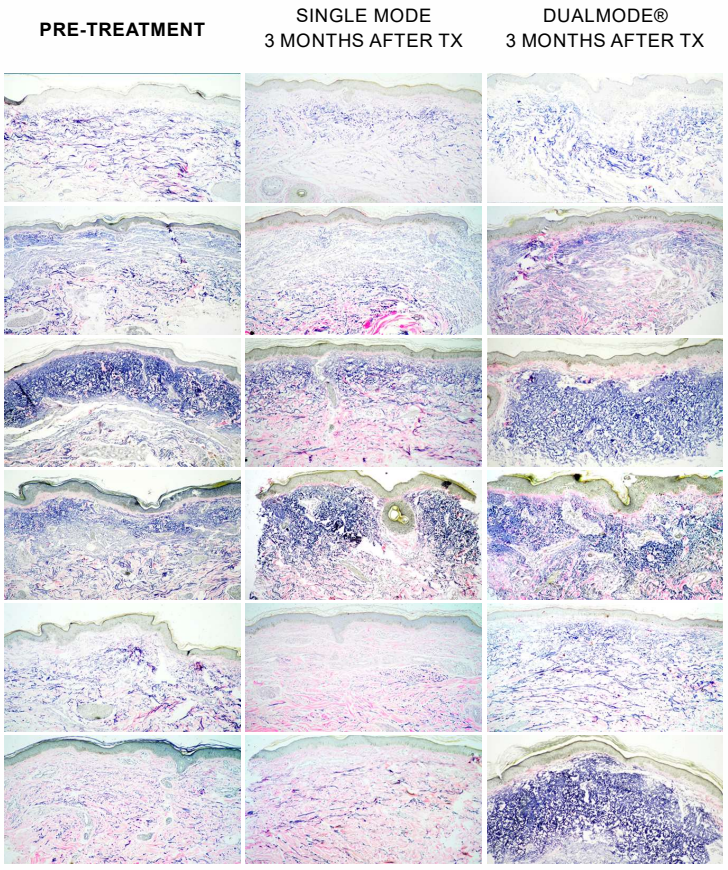


FIGURE 3: Hystological studies revealed that collagen remodeling has been significantly increased 3 months after treatment in all subjects, with a more prominent result were observed in dual mode treated areas. Histology images shown here were stained with Verhoeff.

FIGURE 1 • SINGLE MODE
BEFORE AND AFTER PHOTOS

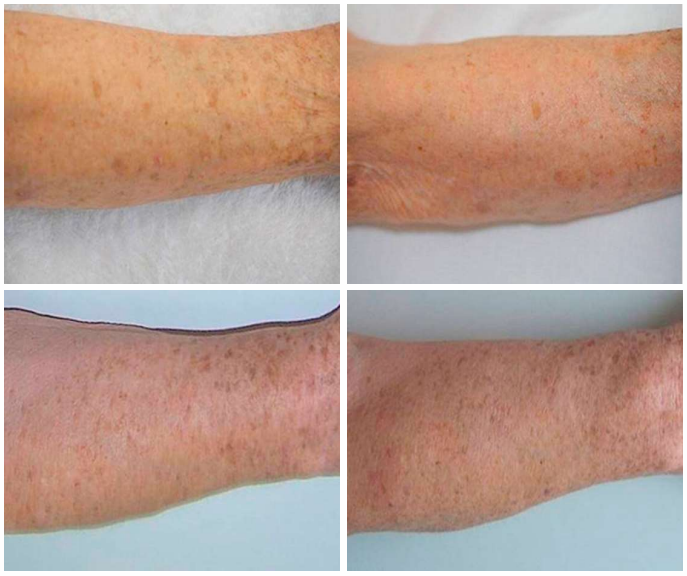
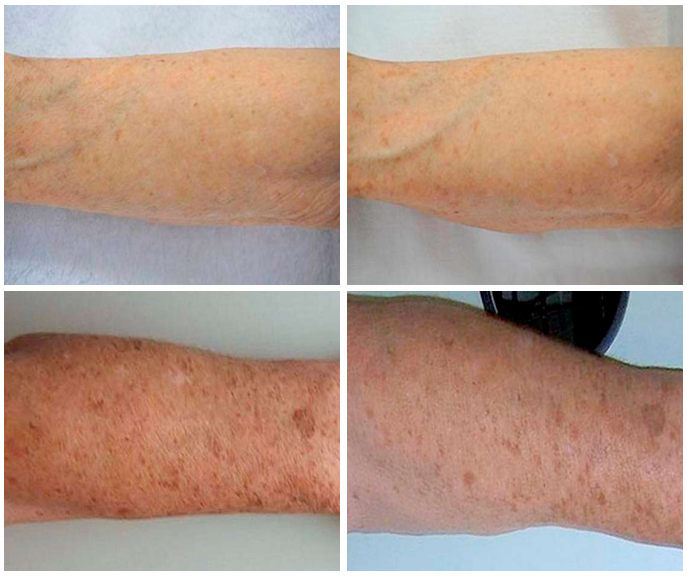


FIGURE 2 • DUALMODE®
BEFORE AND AFTER PHOTOS



FIGURES 1-2: clinical pictures demonstrates visible and more pronounced improvement in skin health, tonus and texture as well in DualMode® side.

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P8269

Ablative vs. nonablative LASER technologies in aging hands: A randomized trial for a new treatment perspective

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Background: Aged hands is a condition typically characterized by wrinkles, dermal atrophy, skin laxity, solar lentigines, actine keratoses, seborrheic keratoses, and proeminent veins. The search for effective treatments for rejuvenation hands has led to the use of LASER technologies and IPL systems as well.

Objective: To assess the efficacy of 2940-nm and 1340-nm LASER devices and IPL system for overall improvement of skin quality, collagen regeneration and also depigmentation on the dorsal surfaces of the hands.

Methods: Twelve patients with brown macules and sun damage spots on dorsal hands were treated. Both dorsal hands were split in 2 equal areas each. Lateral-side part of the right hand was used for controlling and was not treated, while 2940-nm LASER device was performed over medium side of the same hand. On left dorsal hand, 1340-nm LASER device was used on the lateral-side part, while on the medium side both 1340nm LASER and IPL system combined treatment was performed. Patients were treated twice with 4-week intervals. Treatment photos and informed consent were obtained. Pre- and posttreatment pictures, clinical data assessment investigation, and also patient questionnaires were collected for data analysis.

Results: Good to excellent results for rejuvenating hands were observed with all light-source systems. Remodeling of collagen and neocollagen and normalizing the mottled hyperpigmentation were mostly observed on the medium surface of the left hand with 1340-nm LASER plus IPL sources 92% (11/12 patients). The majority of patients, about 83% (10/12), do prefer this treatment modality while 2 of them do prefer the 2940-nm LASER treatment. Most common reported side effects were mild erythema, longer-lasting edema, blister, and pruritus.

Conclusion: Although all of the light devices had been effective for skin rejuvenation of the dorsal hands, 1340-nm LASER plus IPL system were the best treatment option in this study not only for overall efficacy, by stimulating collagen but also improving the discromia, but also for its safety assestment. Additional studies are also required to confirm these findings.

Commercial support: None identified.

P7999

Efficacy of 1064 nm Q-switched Nd:YAG laser in the treatment of nevus of Ota in patients with Fitzpatrick skin types IV and V and utility of melanin index in the treatment outcome

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Background: Q-switched Nd:YAG laser has been used in the treatment of nevus of Ota in all skin types with variable success rate. Data with an objective assessment parameter to this laser treatment is lacking.

Objective: To determine the efficacy and safety of the Q-switched Nd:YAG laser (1064-nm) in the treatment of nevus of Ota in Fitzpatrick skin type IV and V and also to evaluate the utility of melanin index in assessing the treatment response.

Methods: Patients treated with 1064 nm Nd:YAG laser at an interval of 6 to 10 weeks, for a period of 1 to 2 years were studied. The objective improvement (pigment clearance) was determined by melanin index from 2 fixed points: A1, 2 cm below the pupil at the midpupillary line (when the gaze is fixed); A2, the most prominent part of zygoma. The melanin index in these 2 areas was recorded as M1 and M2 respectively. The subjective clinical improvement was determined by the physician and the patient global assessment score.

Results: Thirty-five patients of nevus of Ota were included in the study. All excepting 1 patient had unilateral involvement. The mean baseline melanin indices M1 and M2 were 59.54 $\pm$ 9.72 and 59.02 $\pm$ 9.16, respectively. At the last visit the mean M1 and M2 decreased to 53.8 $\pm$ 8.55 ($P < .001$) and 54.13 $\pm$ 6.01 ($P < .001$), respectively. Patient global assessment showed that overall 26 (74.3%) had >50% pigment clearance from the baseline). Fifteen patients (42.8%) had 50% to 75% improvement, 10 patients (28.6%) had 75% to 95% improvement and only 1 (2.9%) patient had >95% improvement. Assessment performed by the dermatologist blinded to the laser sessions and parameters, showed that 20 patients (57.1%) had >50% improvement. Eight patients (22.9%) had 50% to 75% improvement, 11 patients (31.4%) had 75% to 95% improvement and only 1 (2.9%) patient had >95% improvement. Spotty hypopigmentation after laser treatment was seen in 8 (22.9%) patients which improved over a period of time in most of them. Hyperpigmentation seen in 2 patients also reduced gradually.

Conclusion: The 1064 nm Q-switched Nd:YAG laser offers good improvement in patients with nevus of Ota in darker skin types IV/V. The melanin index, a simple noninvasive parameter is useful in assessing the treatment response more objectively.

Commercial support: None identified.

P8585

Efficacy and patient satisfaction of a new nonablative fractional Nd:YAP laser 1340 nm for facial rejuvenation in Brazilian patients

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This present study wants to demonstrate a new fractional nonablative Nd:YAP 1340 nm laser technology that has been safely and effectively applied to treat photodamage in different skin types. Efforts to attend a growing demand of patients who seeks a procedure that treats wrinkles and improves skin textures with minimal to none downtime has been led to a constant upgrade in nonblative fractional lasers technologies. Intend of study is to determine the safety, efficacy, and patient satisfaction of a new nonablative fractional Nd:YAP laser 1340 nm in facial skin rejuvenation of Brazilian skin types. A comparison was made between treatments with low fluence and multiple passes versus treatments with higher fluence in a single pass. Twenty subjects with visible cutaneous photodamage, all with skin phototypes II to VI, were treated with a new fractional nonablative laser handpiece (Etherea 1340 ProDeep; INDUSTRA Technologies, São Carlos, Brazil). All patients returned every 4 weeks for a total of 3 sessions and were followed up with monthly photos and grading until 6 months after their last treatment session. They also were asked to fill out a "severity scale" where levels of pigmentation, rhytides, skin tone and tightness, texture, and patient satisfaction were noted after last treatment session. Pigmentation, rhytides, skin tone and tightness, and texture were also evaluated by 2 physicians not involved in the study and by Canfield VISIA Complexion. All patients answered a questionnaire at the end of evaluation. Postevaluation questionnaire showed that 100% of the patients felt improvement and 75% would recommend the same treatment to a friend. A new fractional nonablative Nd:YAP 1340 nm laser can be safely and effectively performed to treat photodamage in darker skin types. Although most patients preferred the single pass laser treatment, we did not observe significant difference in the outcome after a low fluence multiple pass versus high fluence single pass treatment and the incidence of side effects were higher in the high fluence single pass treatment. Additional studies with a larger number of subjects and biopsy specimens for histologic assessment are required.

Commercial support: None identified.

P8575

Fractional ablative LASER versus fractional ablative and coagulative LASER for treatment of photodamaged skin in arms and forearms

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Photodamaged skin in arms and forearms are a common issue in dermatologic offices. Treatment with topical creams, peelings, and nonablative fractional lasers have mild results. Ablative lasers showed to have achieved the best results. The main issue, however, relies on extra facial areas, by increasing the risk of adverse effects caused by ablative lasers enhancement. The aim of this present study is to compare the whole effects of a fractional pure-ablative laser versus a fractional ablative and coagulative laser to treat photodamaged skin in arms and forearms, by using low energy doses in order to prevent side effects. Twenty patients have received a pure-ablative fractional laser treatment (known as single mode laser) in 1 arm and forearm, and in the other arm and forearm a combination of both ablative and coagulative laser treatment (known as dual mode laser). Both sides have been treated with a single pass by using a 2940 nm Er:YAG fractional laser (ETHEREA 2940 DualMode, INDUSTRA Technologies, Brazil), receiving 2 treatment sessions with 1 month of between sessions. In single mode was used 500-us pulse width with 10 mJ/MTZ fluence, and 500 us/3 ms pulse width with 10 mJ/MTZ and 10 J/cm^2 fluences for tx in dual mode. Patients were submitted to a skin biopsy before treatment, 1 month after the first and the second treatment, and 3 months after second treatment. Clinical pictures were recorded pretreatment and 3 months of posttreatment. Fifty percent of the patients have prefered the results of dual-mode treatment sessions. The pain was related to be more intense in this side in all of patients, as well. All patients noted a clear improvement in both sides. Biopsy has shown an epidermal and dermal collagen thickering after both treatments, but a more prominent result were observed in dual mode treated areas. No side effects were noticed in any treatment options. The use of low energy of fractional pure-ablative and fractional ablative and coagulative lasers are a safe and effective treatment option to treat photodamaged arms and forearms.

Commercial support: None identified.