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CASE STUDIES
STUDII DE CAZ

Recovery of patients after ablative and non-ablative laser treatments - a case report

Recuperarea pacienţilor în urma tratamentelor ablative şi non-ablative laser - studiu de caz

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Abstract

Background. In the aging process, some patients have multiple signs of aging (wrinkles, skin texture changes, pigmented lesions, vascular lesions, skin laxity) and therefore to treat these changes, combined minimally invasive aesthetic procedures (intense pulsed light - IPL, mesotherapy) and laser therapies are required, which can be performed in the same treatment session or in multiple sessions. In addition to these therapies, sessions of biostimulation are performed to increase the natural healing process.

Aims. The objective of this study was to highlight the significantly higher degree of patient recovery by associating facial treatments and myogymnastic exercises.

Methods. This paper presents the favorable evolution of a patient who received combined treatments: laser resurfacing, myogymnastic exercises and laser biostimulation. During the recovery period, the patient followed a strict hygiene and facial care regime combined with myogymnastic exercises.

Results. The results highlight the benefits of combining laser treatments with facial myogymnastics and biostimulation in one session, demonstrating a shorter healing time, less discomfort and a much more rapid social integration.

Conclusions. Patients with multiple changes in the aging process who seek treatment in aesthetic medicine clinics have higher levels of satisfaction if they receive combined treatments.

Key words: laser resurfacing, facial myogymnastics, biostimulation, healing.

Rezumat

Premize. În decursul ontogenezei, unii pacienți prezintă multiple semne de îmbătrânire (riduri, modificarea texturii pielii, leziuni pigmentare, leziuni vasculare, laxitate tegumentară), iar pentru a putea trata aceste modificări este necesară utilizarea tratamentelor estetice combinate minim invazive (lumina intens pulsată - IPL, mezoterapie) cu tratamente laser, care pot fi efectuate în aceeași ședință de tratament sau în ședințe multiple. Adițional la aceste terapii se efectuează și ședințe de biostimulare, pentru a grăbi procesul de vindecare.

Obiective. Obiectivul acestui studiu a fost să evidențieze gradul mult mai ridicat de recuperare al pacienților, prin alăturarea tratamentelor faciale și a exercițiilor de miogimnastică.

Metode. Lucrarea de față prezintă evoluția favorabilă a unei paciente, care a beneficiat de tratamente combinate: rejuvenare laser, exerciții de miogimnastică și biostimulare laser. Pacienta a urmat pe durata perioadei de recuperare un regim strict de igienă și de îngrijire a feței, combinat cu exerciții de miogimnastică.

Rezultate. Rezultatele evidențiază beneficiile combinării tratamentelor laser, în aceeași ședință, cu miogimastica facială și biostimularea, rezultatele obținute demonstrând o perioadă de vindecare mai redusă, cu un grad redus de disconfort și reintegrarea socială mult mai rapidă.

Concluzii. Pacienții cu multiple modificări în procesul de îmbătrânire, care se adresează clinicilor de medicină estetică, au nivele de satisfacție mai mari dacă sunt aplicate tratamentele combinate.

Cuvinte cheie: laser resurfacing, miogimnastică facială, biostimulare, vindecare.

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Introduction

Laser applications in modern medicine are used in various specialties such as dental medicine, neurosurgery, oromaxillofacial surgery, dermatology, ophthalmology, otorhinolaryngology and sports medicine. Lasers are also used in engineering, computers and communications.

The number of patients who seek help from aesthetic surgeons is increasing (Cicchi et al., 2014). Evolution and revolution in aesthetic surgery allows to perform corrections by classical surgical techniques and minimally invasive techniques using laser technology (Preissig et al., 2012).

Patients who seek treatment in aesthetic medicine clinics for multiple changes that occur during the aging process (wrinkles, facial texture changes, pigmented lesions, vascular lesions, skin laxity, etc.) require the combination of minimally invasive therapies such as IPL or mesotherapy with more complex treatments, i.e., laser therapy, procedures that can be combined in the same treatment session or in multiple sessions (Raulin & Karsai, 2011).

Many studies have shown an improvement in wrinkles, facial texture and skin laxity in the case of multiple treatment procedures. Although multiple clinical effects have been described after the application of these therapies, there are few data regarding the patients' degree of satisfaction (Ramsdell, 2012).

The biological target of lasers used for facial rejuvenation is tissue water. After reaching the target, lasers produce an inflammatory reaction that results in skin collagen synthesis stimulation and remodeling (Usatine et al., 2012), an important process because skin aging occurs due to a reduction of collagen synthesis. Ablative laser resurfacing involves the vaporization of the superficial epidermal layer and its replacement with new collagen and a new epidermis once the healing process is completed (Van Aardt, 2012). Ablation is performed at 2940 nm wavelengths (Railan & Kilmar, 2012). Unlike ablative laser, non-ablative laser does not remove the superficial epidermal layer, but acts on deeper skin layers by intensifying collagen synthesis. Because the superficial layer is not removed, there is no controlled skin burn, which means that patients will need no recovery time and will not have to interrupt their daily activities (Kazemi et al., 2014).

Hypothesis

The study aims to highlight post-treatment recovery possibilities, which are aesthetically and functionally much more advanced using myogymnastic exercises combined with aesthetic facial treatments.

The increasing demand for these therapies underlay this study, which aims to demonstrate the advantages of the combination of the two treatments for the improvement of facial aesthetics.

Material and methods

In what follows, we present the case of a 30-year old female patient, a financial inspector, who came to the aesthetic medicine office for multiple signs of facial skin aging due to voluntary or involuntary grimaces and hyperpigmented lesions. The patient's profession was not associated with solar or ultraviolet radiation exposure.

After an extensive examination, it could be established that the patient had a Fitzpatrick phototype 1 (white complexion with freckles that do not tan during sun exposure, but always get burned), with many hyperpigmented macules in the zygomatic region, on the forehead, and both dynamic and static expression wrinkles, which were classified as Fitzpatrick type 2 (fine to moderately deep wrinkles and a moderate number of linear wrinkles). The hyperpigmented areas were irregular, with an inhomogeneous appearance, being interspersed with non-hyperpigmented skin areas. According to the Glogau classification, considering age as an indicator, the patient did not fit into group 2 with moderate changes, because the age limit for this group is 35-40 years; the skin changes were specific to this group (early to moderate photoaging: early brown spots visible, keratosis palpable but not visible, parallel smile lines begin to appear, wears some foundation). The described aspects are shown in Fig 1.

The patient was not exposed to solar radiation, did not use contraceptive medication and was not under treatment with antibiotics, converting inhibitors, hormone therapy or any type of photosensitizing medication. She denied the presence of disorders associated with melasma (hyperpigmented lesions) such as polycystic ovary syndrome, hyperthyroidism, and of diseases involving skin photosensitivity. Also, she had no allergies.

At the time of examination, the patient was not pregnant or breastfeeding.

The lesions developed during childhood, and the patient was not able to associate their occurrence with any particular events or treatments.

After 2 chemical peeling treatments with 20% glycolic acid, the patient found no improvement of her skin appearance. Subsequently to these treatments, the patient used skin photoprotection.

Fig. 1 – Initial appearance.

The treatment proposed to the patient was a combined one, i.e., ablative laser for dynamic and static wrinkles, and non-ablative laser for hyperpigmented lesions in one session, associated with facial gymnastics for a more rapid post-treatment recovery and for the restoration of functional muscle balance.

Table I
Weekly facial gymnastics program.

Description of the exercise	Monday (repeats)	Tuesday (repeats)	Wednesday (repeats)	Thursday (repeats)	Friday (repeats)	Saturday (repeats)
Raising the eyebrows	15	14	13	10	10	10
Frowning	20	30	30	10	20	10
Closing-opening the eyes	30	30	30	30	30	30
Wrinkling the nose	10	10	10	10	10	10
Pursing the lips	20	20	20	10	10	5
Smiling and laughing	40	40	40	40	30	30
Inflating the cheeks	10	10	10	10	10	10

After IPL treatment (non-ablative treatment, Palomar platform), which consisted of light pulses with pre-established diameters targeting tissue melanin, Micro Laser Peel 25 microns – Fractional Laser 200 microns (ablative laser Er Yag, 2940 nm, Sciton Joule platform), also termed weekend resurfacing in the literature, was performed, as well as low-power laser treatment for biostimulation in order to accelerate healing. The patient was asked to respect the following indications:

– in the open wound phase (2-4 days), the skin was rinsed with thermal water, avoiding contact with other types of water, and was gently dried with sterile compresses;

– during this period, sun exposure or use of sun protection factor creams as well as application of other emollient creams than those recommended (petroleum jelly as a skin emollient combined with anesthetic cream to reduce postoperative discomfort) were forbidden.

– facial gymnastics was performed according to the program indicated in Table I. Thus, after cleaning the skin and applying petroleum jelly, the following myogymnastic exercises were performed: raising the eyebrows (surprise), frowning (moving the eyebrows towards one another), closing-opening the eyes, wrinkling the nose, pursing the lips (attempting to whistle), smiling and laughing (showing the teeth), inflating the cheeks – moving air from one cheek to another. We mention that exercises were performed two times a day, in the morning and in the afternoon.

Results

The patient was followed up and assessed at one day after treatment (Fig. 2), at 2 days (Fig. 3) and at 4 days (Fig. 4). The evolution was favorable, without complications. We mention that the patient strictly followed the medical indications and performed the facial myogymnastic exercises with maximum seriousness.

Fig. 2 – Appearance at 1 day.

Fig. 3 – Appearance at 2 days.

Fig. 4 – Appearance at 4 days.

These exercises allowed facial muscles to obtain a higher oxygen intake, improved blood circulation, reduced pain and accelerated healing and skin cicatrization. Along with low-power lasers, facial gymnastics has an effect of biostimulation of these processes.

Through these combined treatments, the healing process was accelerated, the results allowing the application of cosmetic makeup and sun protection factor creams only a week after facial resurfacing.

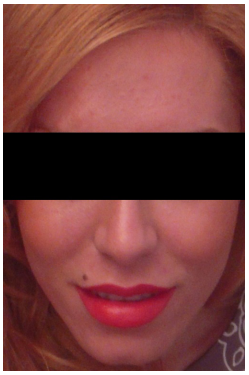

Fig. 5 – Results obtained by the patientafter the recovery period and care including wound cleaning and myogymnastic exercises.

Discussions

Multiple facial treatments fit into the natural evolution trend of medicine and healthcare over the past years, and are continuously improved by revolutionary last-generation technologies, in order to ensure spectacular results in a short time (Small, 2012a).

Lasers and intense pulsed light (IPL) are the latest and most advanced aesthetic methods for achieving consistent, minimal risk facial rejuvenation. The two techniques should be considered as alternative weapons in the fight against aging rather than a replacement of previously available

techniques (Halon et al., 2015). With the introduction of laser therapy, the degree of satisfaction and addressability has continuously increased (Makrantonaki & Zouboulis, 2007) and non-ablative lasers have been rated as having modest or even very good results (Small, 2012b).

For a correct diagnosis of skin aging, for the evaluation of the type of wrinkles and their depth, the patient undergoes complete examination, both statically and during facial expressions (frowning, laughing, smiling, surprise and anger expressions) (Trelles et al., 2009).

So far, devices for skin rejuvenation associated with the use of all non-ablative rejuvenation treatments have led to excellent changes in skin histology and good collagen remodeling (Gulsoy et al., 2006). However, the effects of laser therapies have not always resulted in epidermal restoration, and patient satisfaction in these cases has been lower. In addition, prolonged treatment schemes associated with non-ablative methods may reduce patient compliance with therapy (Trelles et al., 2001).

Patients with multiple skin changes due to premature aging prefer ablative laser treatment followed by facial myogymnastic exercises, the degree of satisfaction being higher than in the case of non-ablative lasers.

Patient satisfaction increases inversely proportionally to the number of treatment sessions used. The use of therapeutic combinations such as non-ablative and ablative laser technologies with various wavelengths intended for all skin layers in one session has been limited, despite the good results obtained and a high degree of satisfaction, by the long post-therapy recovery time.

The best results in facial rejuvenation have been obtained by the application of laser treatment associated with facial gymnastics and facial massage.

Conclusions

1. Following the treatments performed, the patient had a very high degree of satisfaction.

2. It was found that aesthetic appearance was significantly improved through the reduction of hyperpigmentation and premature aging signs.

3. Myogymnastic exercises contributed to the shortening of the recovery period and to more rapid healing.

Conflicts of interests

No conflict of interests.

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