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SAFETY AND EFFECTIVENESS OF USE OF 1470 NM NON-ABLATIVE FRACTIONAL LASER IN PATIENTS WITH PHOTOTYPE V - A CASE REPORT

Seguridad y eficacia del uso del láser fraccional no ablativo de 1470 nm en pacientes con fototipo v - reporte de caso

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ABSTRACT

Objective: To describe the treatment of a 67-year-old patient, phototype V. This **case report** describes the treatment of a 67-year-old patient, phototype V. The patient underwent four sessions of a 1,470 nm non-ablative fractional laser. The growing demand for minimally invasive aesthetic procedures has driven the search for treatments that are not only effective but also safe for all skin types. However, a clinical and ethical challenge arises in the treatment of patients with higher phototypes (IV to VI), whose higher concentration of melanin in the epidermis substantially increases the risk of complications such as hyperpigmentation, depigmentation, burns, and inflammatory processes. The development of technologies that offer safety for this population represents a crucial advance in aesthetic dermatology. **Conclusion:** The importance of customizing protocols for high phototypes is emphasized, the mechanics of laser action are analyzed, and the clinical and subjective outcomes obtained with the safety and efficacy of this approach are detailed.

Keywords: non-ablative laser, safety, high phototype, 1,470 nm

RESUMEN

Objetivo: Describir el tratamiento de un paciente de 67 años, fototipo V. Este **caso clínico** describe el tratamiento de un paciente de 67 años, fototipo V. El paciente se sometió a cuatro sesiones de láser fraccional no ablativo de 1470 nm. La creciente demanda de procedimientos estéticos mínimamente invasivos ha impulsado la búsqueda de tratamientos que no solo sean efectivos, sino también seguros para todo tipo de piel. Sin embargo, surge un desafío clínico y ético en el tratamiento de pacientes con fototipos más altos (IV a VI), cuya mayor concentración de melanina en la epidermis aumenta sustancialmente el riesgo de complicaciones como hiperpigmentación, despigmentación, quemaduras y procesos inflamatorios. El desarrollo de tecnologías que ofrezcan seguridad para esta población representa un avance crucial en la dermatología estética. **Conclusión**: Se enfatiza la importancia de personalizar los protocolos para fototipos altos, se analiza la mecánica de acción del láser y se detallan los resultados clínicos y subjetivos obtenidos con la seguridad y eficacia de este enfoque.

Palabras clave: láser no ablativo, seguridad, fototipo alto, 1470 nm

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RESUMO

Objetvo: descrever o tratamento de uma paciente de 67 anos, fototipo V. Relato de caso, a paciente foi submetida a quatro sessões do laser fracionado não ablativo de 1470 nm. A crescente demanda por procedimentos estéticos minimamente invasivos tem impulsionado a busca por tratamentos que sejam não apenas eficazes, mas também seguros para todos os tipos de pele. Entretanto, um desafio clínico e ético se impõe no tratamento de pacientes com fototipos mais elevados (IV a VI), cuja maior concentração de melanina na epiderme aumenta substancialmente o risco de complicações, como hiperpigmentações, despigmentações, queimaduras e processos inflamatórios. O desenvolvimento de tecnologias que ofereçam segurança para essa população representa um avanço crucial na dermatologia estética. **Conclusão**: foi enfatizado a importância da personalização de protocolos para fototipos altos, analisa a mecânica de ação do laser e detalha os desfechos clínicos e subjetivos obtidos, com segurança e eficácia dessa abordagem. Palavras-chave: laser não ablativo, segurança, fototipo alto, 1,470 nm

INTRODUCTION

Brazil stands out in the world of aesthetics, ranking second in the number of procedures performed, behind only the United States[1]. The demographic profile of the Brazilian patient is notably heterogeneous, with a high prevalence of individuals with high phototypes.

Thus, non-invasive procedures become even more attractive as they promise to deliver the results sought by the patient without causing any damage to the epidermis[2]. In this sense, dermal lasers are a notable example, which are fundamentally based on creating microthermal zones of tissue damage with the aim of rejuvenating and improving skin quality[3].

Traditionally, laser technologies have been designed and tested on light skin types (phototypes I to III), resulting in a significant data gap regarding their safety and efficacy in phototypes IV to VI. The high concentration of melanin in these patients promotes greater absorption of light energy, which increases the probability of adverse events[4,5]. This reality has historically excluded this population from several conventional therapeutic strategies, highlighting the need to develop and validate specific protocols that minimize risks without compromising clinical efficacy.

In this context, Laser Me (Neauvia, Poland) emerges as a promising solution. This 1470 nm non-ablative fractional device is distinguished from other technologies by its low affinity for melanin and high absorption by water, making it a safer option for skin with greater pigmentation. Its action is based on creating microthermal zones of coagulation in the dermis, which stimulate the remodeling of collagen and elastin without causing significant damage to the epidermis. The expected result is an improvement in skin firmness, texture, uniformity, and luminosity.

Therefore, this article aims to present a clinical case report that evaluates the aesthetic results from the application of four sessions of the Laser Me on a patient with phototype V, highlighting the clinical outcomes and the safety of the adopted protocol.

CASE REPORT

A 67-year-old female patient with phototype V and no prior history of aesthetic procedures sought treatment with the main complaint of skin laxity and pronounced nasolabial and labiomental folds. After a detailed clinical evaluation, treatment with a 1470 nm non-ablative fractional laser was proposed, using a personalized protocol specifically designed for the characteristics of high-phototype skin. The treatment consisted of four sessions, with 30-day intervals, using personalized energy parameters of 18 mJ/MTZ, a spacing of 2.5, and 70 pulses per session. The procedure was well-tolerated by the patient, with no reports of significant adverse events during or after the sessions.

The patient underwent evaluation using standardized digital photography (3D stereophotogrammetry) with the VECTRA H2 3D device and Mirror® software from Canfield Scientific Inc., Fairfield, NJ, USA. The photographs were taken according to the manufacturer's recommendations. The photographic protocol was conducted in a well-lit environment, with standardized operator and positioning.

The images obtained were compared with each other and assessed by a trained evaluator. In addition to the standardized photographs, an evaluation was performed using aesthetic improvement scales: the SGAIS (Subject Global Aesthetic Improvement Scale) [6,7], in which the patient self-assessed their improvement after each treatment session, as well as the Tolerance Questionnaire, in which the participant also indicated the perceived degree of tolerability during each session.

RESULTS

Upon completion of the treatment, after the fourth session, significant clinical results were observed, including evident tissue retraction, improved definition of facial contours, and a softening of the nasolabial and labiomental folds, as can be seen when comparing the images in Figure 1. The skin quality also improved, appearing more uniform, hydrated, smooth, and luminous.

Regarding the analyses from the VECTRA H2 3D with Mirror® software from Canfield Scientific Inc., Fairfield, NJ, USA, a considerable increase was noted in all evaluated scores. This was particularly evident in parameters such as spots, wrinkles, skin texture, and red areas (indicative of vasodilation), as can be observed in the images in Figures 2 and 3. In this evaluation, the software considers a percentage closer to 100 to indicate a better patient status for that specific parameter. Therefore, this quantitative measure substantiates the aspects already observed and described in the images obtained through the photographic protocol.

Figure 1- A - Initial record (03/10/2025) and B - Final record (08/12/2025).

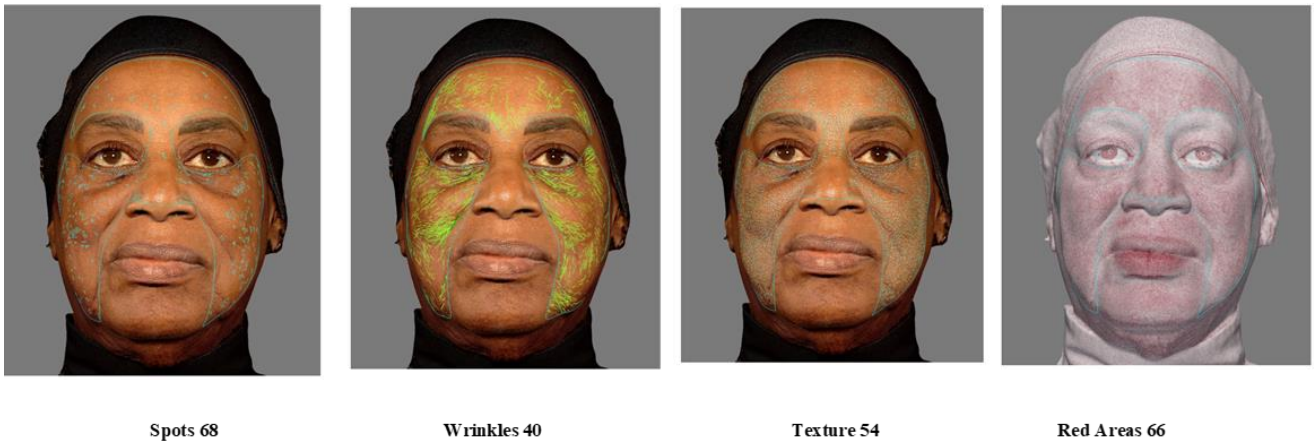

Figure 2 - Initial analyses from the VECTRA H2 3D with Mirror® software from Canfield Scientific Inc., Fairfield, NJ, USA, regarding the parameters of spots, wrinkles, skin texture, and red areas.

A reduction in the area and intensity of hyperpigmented spots was evident, reflecting an improvement in skin tone and uniformity. There was also a significant decrease in the depth and quantity of wrinkles, especially in the periorbital and perioral areas. The skin texture appeared smoother and more uniform, with a reduction in roughness and the appearance of superficial irregularities. Furthermore, a decrease in areas of erythema was observed, which indicates a reduction in vasodilation and subcutaneous inflammation. In this way, a substantial improvement was noted across all parameters, reflecting a global enhancement in the patient's skin quality.

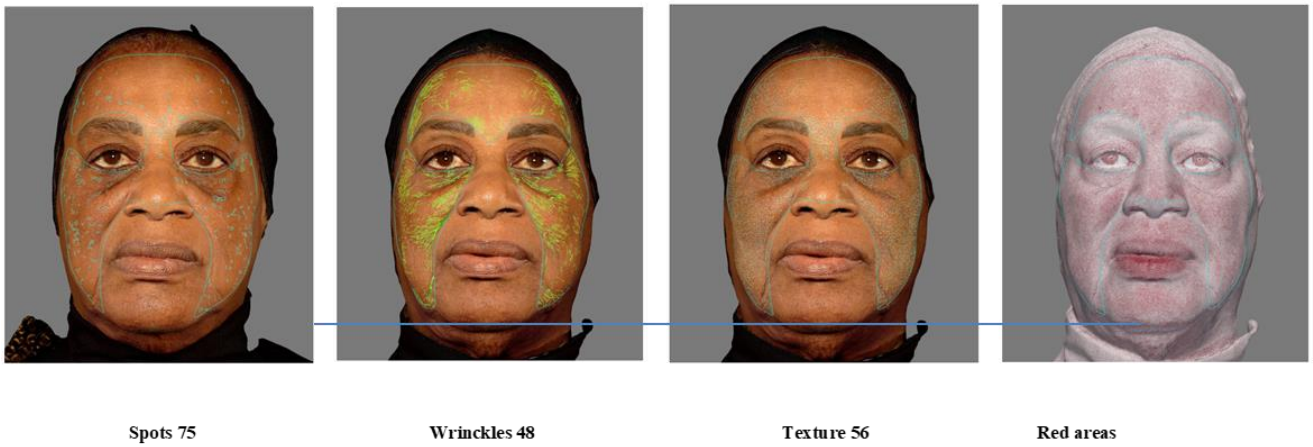

Figure 3 - Final analyses from the VECTRA H2 3D with Mirror® software from Canfield Scientific Inc., Fairfield, NJ, USA, regarding the parameters of spots, wrinkles, skin texture, and red areas.

The patient's subjective evaluation, performed using the Subject Global Aesthetic Improvement Scale (SGAIS), classified her progress as "excellent improvement." In addition to the technical aspects, the patient reported a positive impact on her self-esteem and well-being, recognizing the changes as significant in her perception of aging and skin health.

DISCUSSION

The present case report demonstrates the clinical efficacy of the 1470 nm non-ablative fractional laser in a phototype V patient, pointing not only to the results achieved but also to broader reflections on the historical challenges, physiological implications, and the need for equity in the practice of aesthetic dermatology.

Patients with high phototypes present biological particularities that make clinical management more complex. The greater quantity and density of melanosomes, as well as their diffuse distribution throughout the epidermis, increase the risk of post-inflammatory hyperpigmentation and pigmentary complications following thermal or inflammatory stimuli[4]. Furthermore, inflammatory responses tend to be more intense, which can result in a greater predisposition to the formation of hypertrophic scars and keloids. These characteristics justify the need for carefully individualized protocols that respect the limits of energy, shot density, and recovery intervals, in order to minimize risks without compromising clinical outcomes[5].

In this context, the 1470 nm laser presents itself as a promising alternative, since its primary affinity is for water and not melanin. This characteristic reduces the risk of excessive epidermal absorption and subsequent pigmentary changes, making it safer for high phototype skin. Its mechanism of action is based on the creation of microthermal zones in the dermis, stimulating the remodeling of collagen and elastin without significant damage to the epidermis[8]. This selectivity justifies the results observed in this case, where there was tissue retraction, improved skin texture, and skin uniformity with no recorded complications.

Another relevant point is the patient's age (67 years old). Cutaneous aging is associated with decreased fibroblast activity, a reduction in collagen and elastin synthesis, and a greater susceptibility to skin laxity and deep folds. Despite these limitations, the protocol employed proved capable of inducing effective remodeling, with results visible both clinically and subjectively. This finding reinforces previous studies that point to the ability of non-ablative fractional lasers to promote tissue improvement even in elderly patients, provided they are used with adjusted parameters[8].

Furthermore, the three-dimensional evaluation with the VECTRA H2 3D allowed for the objective documentation of improvements, providing robust quantitative and visual data. The increase in the observed scores, especially in the areas of spots, wrinkles, and skin texture, corroborates the findings of previous studies that report the efficacy of the 1470 nm laser in promoting dermal regeneration and enhancing the overall appearance of the skin. The decrease in red areas, indicative of less inflammation and vasodilation, also suggests that the treatment was well tolerated by the patient, with minimal post-procedure effects of erythema or irritation.

Although the immediate results were satisfactory and free of complications, it is important to emphasize the need for medium- and long-term follow-up. In high phototype patients, pigmentary complications can emerge late, which justifies post-procedure clinical follow-up protocols and continuous guidance on photoprotection. The absence of adverse effects in this case, to date, reinforces the safety of the approach but does not exclude the importance of prolonged monitoring.

Finally, this report also highlights social and ethical implications. Aesthetic dermatology has historically neglected patients with more pigmented skin by basing protocols primarily on individuals with phototypes I to III. This exclusion has created inequality in access to rejuvenation technologies, perpetuating disparities in aesthetic health[3]. The safe and effective use of the 1470 nm laser on a phototype V patient represents not only a technical advancement but also a movement toward equity. Ensuring that Black and mixed-race skin has access to evidence-based protocols is a matter of health justice, in addition to expanding the field of aesthetics toward a more inclusive reality.

From a scientific and social perspective, this report contributes to the expansion of available evidence on the use of laser technologies on pigmented skin, which is traditionally underrepresented in clinical studies and often deprived of access to safe therapies. In this sense, the observed success reinforces not only the technical value of the Laser Me but also the need for inclusion and equity in the field of aesthetics.

Portanto, este caso se soma às evidências emergentes que apontam os lasers fracionados não ablativos como ferramentas promissoras no rejuvenescimento facial de pacientes com fototipos IV a VI, Therefore, this case adds to the emerging evidence that points to non-ablative fractional lasers as promising tools for facial rejuvenation in patients with phototypes IV to VI, provided they are used with individualized protocols and are accompanied by adequate clinical follow-up. More robust clinical trials with a larger number of patients are necessary to consolidate this evidence and allow such technologies to be applied safely, effectively, and comprehensively in clinical practice.

Thus, the presented case reinforces the potential of the 1470 nm laser as an innovative and safe technology for the rejuvenation of pigmented skin, expanding not only the therapeutic arsenal but also the representation of groups historically excluded from aesthetic practice. Additional studies with a larger number of patients and prolonged follow-up are necessary to consolidate this evidence and validate the routine application of this technology in phototypes IV to VI.

More than just the isolated aesthetic outcomes, this case highlights the importance of personalized protocols for individuals with high phototypes due to their particular physiological characteristics. The 1470 nm wavelength proved to be a strategic choice by acting primarily on tissue water and minimizing melanin absorption, ensuring safety without compromising clinical efficacy. New clinical studies with a broader sample need to be developed to create safe and effective protocols.

CONCLUSION

This case report reinforces the safety and efficacy of the 1470 nm non-ablative fractional laser in treating phototype V skin. The individualized protocol used enabled tissue retraction, a reduction in nasolabial and labiomental folds, and a global improvement in skin quality, with no recorded adverse effects. The high patient satisfaction, expressed through the Subject Global Aesthetic Improvement Scale (SGAIS), confirms the clinical relevance of this approach.

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