Case report

Revitalization without needles: Post radiation therapy scars in oncology patients

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Abstract. *Background:* High-quality non-invasive treatments, when performed by experienced professionals, can be highly beneficial for cancer patients seeking to restore the appearance and health of their skin after aggressive therapies such as chemotherapy and radiotherapy. In this report, we present a clinical case involving needle-free revitalization using a specialized protocol targeting radiation-induced scars, yielding excellent outcomes. *Methods:* We describe the case of a 44-year-old female oncology patient presenting with erythema and skin lesions on her arms, caused by compulsive scratching due to post-radiation pruritus. The patient underwent a combination of needle-free biostimulation (PRX-T33) and FDA-approved non-invasive microneedling (SKIN PEN). PRX-T33, a formulation containing 33% trichloroacetic acid and hydrogen peroxide, was used to stimulate dermal regeneration without causing frosting, leading to enhanced skin quality and reduction of post-treatment marks. The addition of non-invasive microneedling further promoted skin regeneration and collagen stimulation, effectively addressing acneiform scars and similar imperfections. This synergistic approach led to skin rejuvenation, regeneration, and an overall improvement in skin tone. *Results:* The treatment resulted in visible enhancement of skin tone and a reduction of post-aggression marks on both arms. These improvements confirmed the appropriateness of the combined therapeutic approach. Additionally, the patient expressed high satisfaction with the outcomes, further supporting the efficacy of the treatment. *Conclusion:* The combination of needle-free biostimulation (PRX-T33) with non-invasive microneedling (SKIN PEN) represents an effective and safe option for improving skin quality in oncology patients. The absence of adverse events highlights its suitability for this particularly sensitive patient group.

Key words: stimulation, oncology, hydrogen peroxide, erythema, skin lesions, post radiation

Introduction

Health goes beyond the absence of a disease; it is a state that includes the physical and emotional aspects of one's life in which self-esteem plays an important role.

This is where aesthetic medicine plays an important role in achieving physical and emotional well-being throughout the oncological process.

Image has a direct impact on our self-perception, on our identity, and therefore the therapeutic value of its care is fundamental.

The oncology patient can benefit from different aesthetic medical treatments throughout each stage of the disease, during which physical deterioration is evident. If the oncology patient's appearance is improved, it will undoubtedly have a positive impact in coping with the disease.[5]

Cancer treatments have adverse effects that affect the skin, hair and nails. This is why an early intervention at a medical aesthetic level is vital.

Once the oncological treatment has terminated (whether chemotherapy or radiotherapy), the aesthetic doctor, in coordination with the oncologist, can

intervene to improve the appearance of hyperpigmentation, scars or any other type of skin alteration resulting from this type of aggressive treatment.

Material and Methods (PRX – Skin Pen Procedures + Assessments)

Clinical history

We present the case of a 44-year-old female oncology patient who consulted for erythema and skin lesions on her arms due to compulsive scratching as a result of post-radiation pruritus.

The treated patient developed an autoimmune disease at the age of 12 (possible but unconfirmed lupus), which attacked her kidney 4 years later, for which she started dialysis and had to undergo two kidney transplants, and which was the apparent cause of the subsequent neoplasm she eventually developed and for which she required a radiotherapy treatment.

This confirms that long-term involvement of the immune system plays an important role in the development of neoplastic diseases.

The neoplasm was of the renal type and the radiotherapy the patient received was as an adjunct to chemotherapy, not as a single treatment.

A skin rash is a common side effect of certain types of cancer treatments.

The patient suffered from radiation dermatitis, a rash that develops in patients receiving radiotherapy and, although it often occurs on the area of the skin that directly receives the radiation, it can also appear on other areas.

The compulsive scratching that the patient carried out on her arms, an area of the body that was already sensitive in her case due to the dialysis she had received for an extensive period of many years, left the marks that led her to come to our practice.

The patient had not previously used aggressive products, only soothing products such as rosehip, nor had she had any previous treatment in the area.

In our clinical case, the patient underwent needle-free biostimulation (PRX-T33) combined with FDA-approved non-invasive microneedling (SKIN PEN).

Needle-free biostimulation, based on a 33% trichloroacetic acid and hydrogen peroxide formulation, eliminates the frosting effect, promoting overall skin improvement and reducing post-aggression marks. When combined with non-invasive microneedling to regenerate the skin and stimulate collagen production, this approach effectively treats acne-like scars and similar imperfections, resulting in skin rejuvenation, regeneration, and an improved overall tone.

PRX-T33 is a non-invasive medical device based on the well-known trichloroacetic acid (TCA) peel, which, thanks to its combination with hydrogen peroxide (H2O2), penetrates the dermis very quickly, activating a regenerative process without damaging the epidermis[1].

PRX-T33 combines 33% TCA (trichloroacetic acid) - on which peelings are based - with hydrogen peroxide. The novelty of this treatment lies in this fusion: The mechanism of action of hydrogen peroxide combined with TCA minimizes the aggressive effects of peeling (frost or exfoliation of the dermis), stimulating the dermis in a non-invasive way, which makes it the ideal treatment for the care of oncology patients and their skin sequelae.

PRX-T33 promotes the stimulation of fibroblasts[3] and growth factors without generating inflammation or damaging the skin. Furthermore, this treatment can be carried out at any time of the year, unlike peelings, because it is not photosensitizing and is suitable for all skin types.

Uses for this treatment include:

1. This new needle-free biorevitalisation protocol is indicated to combat facial and body tissue flaccidity and to act as a skin biorevitaliser, improving the appearance of the skin without damaging it.
2. To eliminate stretch marks or melasma that appear in the form of large spots on women before and after pregnancy and scars caused by chicken pox and acne.

3. It is also recommended for use as an adjuvant to laser and radiofrequency treatments to enhance results.
4. As a base treatment for patients undergoing touch-ups with mini-threads, vitamins and platelet-rich plasma (PRP), fillers, laser.
5. It is recommended in combined treatments, because it enhances the benefits of both individual therapies.

Biostimulation needle-free protocol:

1. Cleanse the skin with mild soap, rinse thoroughly, and dry completely.
2. Apply 2 ml of PRX-T33 per arm using manual massage or a spatula.
3. Perform 3 applications per arm, massaging the product forcefully in an ascending manner until it is absorbed and palpable or visible turgor is observed.
4. Wash the arms with plenty of fresh water.
5. Apply a moisturizing body cream containing glycolic acid.
6. Repeat the process for three weekly sessions.

SkinPen® Precision is the world's first FDA-cleared microneedling device that activates the skin's natural healing process to treat acne scarring and help improve the appearance of fine lines and wrinkles, surgical scars, stretch marks and enlarged pores[4]. It is also useful for improving the cosmetic appearance of pigmentary conditions (dyschromia) by returning the skin to a more standard pigment[2].

Indications are:

- Acne scars
- Fine lines and wrinkles (on the face and neck)
- Surgical scars
- Stretch marks
- Enlarged pores
- Pigmentation conditions (Dyschromia: Melasma, Vitiligo and Solar Lentigines)
- 5 treatment areas:
- Face
- Neck
- Neckline
- Hands
- Body

Microneedling protocol:

1. Cleanse the skin with mild soap, rinse thoroughly, and dry completely.
2. Apply the product suitable for microneedling to facilitate smooth device movement over the skin.
3. Pass the device over both arms for 15 minutes each, using a combination of directions (vertical, horizontal, and diagonal).
4. Reapply the initial cream and provide the patient with additional product for home use after 18 hours.
5. Ensure the patient uses sun protection on the treated area.

Results

One 44-year-old Caucasian female patient was treated with biostimulation without needles (PRX-T33) combined with no invasive microneedling approved by the FDA (SKIN PEN), to improve the appearance of her skin after an oncology treatment involving both arms.

We combined 3 biostimulation sessions (1 per week) with 1 microneedling session (1 week after the last biostimulation).

The patient was assessed before the procedure and 2 months after carrying out the treatment.

The patient did not experience any side effects from either treatment. The patient-perceived GAIS score was of 4.7/5. The investigator-perceived GAIS score was also of 4.7/5.

We observed an overall improvement in the skin tone of both arms and a decrease of post aggression marks also on both arms, which confirms the effectiveness of this choice of treatment. The degree of the patient and investigator satisfaction also confirms the effectiveness of the combination of both treatments.

Figure 1. Skinpen session + PRX-T33 sessions Right arm pre-treatment.

Figure 2. Right arm 2 months after treatment.

Figure 3. Left arm pre-treatment.

Figure 4. Left arm 2 months after treatment.

Discussion

Quality non-invasive procedures in experienced hands can be a great ally for cancer patients who need to improve the appearance of their skin after aggressive treatments such as chemotherapy and radiotherapy.

The combination of non-invasive biostimulation with microneedling has proved to be a good tandem for improving the appearance of damaged skin in patients presenting this issue after cancer treatments.

Thanks to the combination of compounds such as trichloroacetic acid and hydrogen peroxide, PRX-T33 is the ideal device to avoid frost on the skin and not attacking it even if it manages to enter the deepest layers.

In addition, the microneedling Skin Pen, the only one approved by the FDA, has no side effects beyond a slight reddening of the skin.

Since PRX-T33 is a treatment that is even more effective in combination with other procedures, this tandem is the perfect ally for vulnerable as cancer patients.

Conclusions

Needle-free biostimulation (PRX-T33), combined with FDA-approved non-invasive microneedling (SKIN PEN), can be an effective treatment to improve the skin appearance of vulnerable patients, such as those undergoing oncology treatments. This combination offers satisfactory results without being associated with adverse events (AEs), which is particularly important for this patient group.

Informed Consent: Written informed consent was obtained from the patient concerned.

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Conflict of Interest: There is no conflict of interest in this article.

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