

## Localized TCA peel for static facial wrinkle: case series

*Peeling de ATA localizado para rugas estáticas da face: série de casos*

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### ABSTRACT

Since antiquity, chemical peelings are still widely used to treat skin aging. There are a variety of substances, techniques, and considerations for each type of peeling. However, this case series aims to present a non-described form of application of trichloroacetic acid (TCA) and retinoic acid to treat fine static wrinkles on the face. The technique consists of applying the TCA peeling directly to the facial rhytids and, subsequently, retinoic acid peeling all over the face for 6 hours.

**Keywords:** Chemexfoliation; Trichloroacetic acid; Skin aging; Chemical abrasion

### RESUMO

Empregados desde a antiguidade, os peelings químicos são ainda muito utilizados para o tratamento do envelhecimento cutâneo. Existe uma variedade de substâncias, técnicas e considerações para cada tipo de peeling; no entanto, o objetivo desta série de casos é apresentar uma forma não descrita de aplicação do ácido tricloroacético (ATA) e ácido retinoico para tratamento de rugas finas estáticas da face. A técnica consiste em aplicar o peeling de ATA diretamente nas ríndes faciais e, subsequentemente, peeling de ácido retinoico em toda a face por seis horas.

**Palavras-chave:** Desfolhantes químicos; Ácido tricloroacético; Envelhecimento da pele; Abrasão química

## Case Report

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## INTRODUCTION

The skin aging process occurs through two mechanisms: chronological and extrinsic aging. While the first refers to the natural and chronological skin senescence, with the appearance of fine static wrinkles, xerosis, and cutaneous atrophy, the second is associated with accelerated aging mainly due to photodamage caused by chronic exposure to ultraviolet radiation (UV) and is marked by the accentuation of deep dynamic wrinkles, skin neoplasms, and actinic melanosis in photoexposed skin. Although each group is studied alone, the skin aging process occurs through the simultaneous action of both mechanisms.<sup>1,2,3,4</sup>

Chemical peels are a way to treat skin aging, based on a layered effect, resulting in desquamation at various depths with a positive cosmetic result on the skin. They correspond to a practical and accessible tool in the daily routine of the dermatologist. However, they are not exempt from risks, such as post-inflammatory hyperpigmentation, discomfort, and changes in scarring.<sup>2,4,5,6</sup>

Peeling is superficial when it causes an effect restricted to the epidermis; medium, when it acts up to the papillary dermis; and deep, when it reaches the reticular dermis.<sup>2,4,5,6</sup> This selective effect depends on factors such as skin condition and preparation, application technique, the substance used, and, mainly, the number of layers applied. Trichloroacetic acid (TCA) 30–50%, for example, is generally considered a medium peel when applied in a single layer. Despite so many variables, the quality of the frost generated by the TCA peel allows clinical inferences on the depth of action of the procedure.<sup>2,5</sup>

The intracellular action of retinoic acid results in multiple positive effects on the skin.<sup>4</sup> It promotes dermal deposition of collagen and glycosaminoglycans, regularizes epidermal keratinization, and favors melanin dispersion. It is a superficial peel and its effect may also depend on how long the product remains on the skin.<sup>4,6,7</sup>

This case series aims to report the localized application of the 30% TCA peel combined with the 5% retinoic acid peel on the entire face as a treatment option for static fine facial wrinkles.

## CASE REPORT

We treated four patients, aged between 50 and 84 years, with skin phototypes II to IV and complaints of facial wrinkles related to skin aging, consisting specifically of fine static rhytids, in addition to deep dynamic rhytids, located mainly in the frontal, periorbital, perioral, mental, and masseteric regions. Also, other signs of skin senescence were present, such as atrophy, xerosis, actinic melanosis, and sagging.

Patients were photographed before treatment and 30 days after completion. The treatment consisted of daily use of 0.025% retinoic acid creams, moisturizer with ceramides, and SPF 30 sunscreen, associated with 10 mg of lutein orally for skin preparation. After 30 days, we performed the first session of the combination of chemical peels.

Initially, we cleaned the entire face of the patients using cotton with 70% alcohol. Then, TCA 30% in alcoholic solution was applied only to the facial rhytids, both fine and deep, using a needle and fine cotton in several layers until the formation of pearly white frost and local erythema. After that, 5% retinoic acid cream was applied all over the face and kept for six hours (Figure 1).

The subjective analysis of the pre and post-treatment photographs taken by the applicator and by an evaluator revealed the attenuation of fine and deep wrinkles on the face, in addition to the expected improvement in other signs of skin aging (Figure 2). Patients reported adverse events of skin peeling for approximately three days over the entire face and more intense and lasting in the places of TCA application (about five days). However, they considered it tolerable and without sequelae. We performed three sessions with intervals of 30 days between them.

## DISCUSSION

Chemical peels are an essential tool to treat skin aging. However, to achieve the desired result, it is necessary to understand and master the depth of action of this procedure. Thus, it is fundamental to know how to combine the different factors involved in this act to maximize the cosmetic effect and minimize the risks inherent to the procedure. Phototype, skin preparation, application technique, daily care, and photoprotection are essential for an adequate outcome.<sup>2,5,6</sup>



**FIGURE 1:** 5% retinoic acid peel; formation of pearly white frost, and mild local erythema with the application of TCA 30% directly on the facial rhytids



**FIGURE 2:** Comparative photos between the pre and post-treatment period (30 days after the third and last session of the combined peeling in question), showing improvement and attenuation of signs related to skin aging, especially fine and static facial wrinkles

The daily use of moisturizers and retinoic acid beforehand is crucial to even out the skin. It happens through different mechanisms: reduction of the stratum corneum thickness; normalization of epidermal keratinization; increased melanin dispersion; and stimulation of dermal deposition of collagen fibers.<sup>4,6</sup> This process results in a more regular absorption of the peeling and an additive effect, both epidermal and dermal. Also, oral antioxidants, such as lutein, associated with daily photoprotection helped minimize the risk of post-inflammatory hyperpigmentation, not rarely associated with TCA peel, especially in higher phototypes.<sup>2,5,6</sup>

TCA peel has been indicated to treat fine wrinkles on the face for years. It has a dermal effect through an inflammatory response that promotes subepidermal collagen deposition and elastic fiber reorganization.<sup>2,5,6,7,8</sup> This peeling is classically applied throughout the anatomical region to be treated. However, pain, discomfort, longer recovery time, risks of post-inflammatory hyperpigmentation, and unsightly scarring sometimes reduce the number of patients willing to undergo this treatment, especially in cases of localized facial wrinkles.<sup>3,7,8</sup> Due to these factors, this case series considered the localized application of TCA 30% directly on the wrinkles of previously prepared skin, combined with subsequent 5% retinoic acid peel all over the face, to treat fine facial rhytids and improve the skin's general appearance.

Technically, 30% TCA peel in fine facial wrinkles treatment aims to form a pearly white frost with mild local erythema. It suggests an extension of involvement to the papillary dermis,

which is desired in this case.<sup>2</sup> This clinical evaluation is essential, as it minimizes excessive, exaggerated, or insufficient attitudes regarding the application technique, which, together with all other skincare considered, favors a more precise and safe procedure, with less risk of adverse events and unwanted results.<sup>2,5,6</sup> Despite this consideration, it is the localized application of TCA that should be highlighted, in the opinion of the authors, as it promotes a new way of approaching and treating static fine facial wrinkles with less risk of unwanted depigmentation and discomfort, whether due to the use of a smaller quantity of the product, or due to the smaller area manipulated with TCA, which also makes the procedure more practical, safe, and effective for the patient.

The finalization with retinoic acid peeling all over the face also aims to reduce other signs of skin aging, in addition to the rhytids, accelerate the epidermal renewal process, and prepare the skin for subsequent sessions.

## CONCLUSION

Chemical peels have historically been a helpful tool to treat skin aging. The TCA peel, thus, is classically used to treat fine static facial wrinkles. However, patient discomfort and the possibility of complications such as post-inflammatory hyperpigmentation and unsightly scarring may hinder the use of this tool. Therefore, a new way of applying the substance, locally, only in facial wrinkles, can collaborate to minimize risks and maximize the procedure efficiency. ●

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