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CASE REPORT

Intralesional cryosurgery for the treatment of upper lip keloid following deep chemical peeling

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Abstract Scarring following chemical peeling of the face is the worst fear for the treating physician. This case report describes the successful treatment of a large mature keloid of the upper lip following deep chemical peeling by using intralesional cryosurgery.
Level of Evidence: Level V, therapeutic study.

Introduction

Scarring is, for the treating physician, the most serious complication following chemical peeling of the face [1–3]. The contributing factors for scarring are not well understood, apart from a hereditary or genetic predisposition. Fortunately, scarring is not a common complication and it appears to be directly related to the depth of the peel itself: the deeper reticular peel has a greater risk of scarring than the more superficial papillary dermal peel. In addition, the presence of the number and density of skin adnexa is important in limiting the possibility of scarring.

Many cases of scarring are secondary to other complications, such as infection, premature peeling, previous treatment with isotretinoin Accutane (Roche Pharmaceuticals, Nutley, NJ), or trauma of the newly healed skin, rather than a direct complication of the chemical peel itself. It has been reported that using a chemical solution of the peel that is too concentrated and picking by the patient of the superficial crusting due to intense pruritus may also contribute to the occurrence of scarring [3]. Post-peeling treatment with occlusive taping and post-operative application of different skin preparations may also contribute to the deepening of the peel. Some individuals are simply genetically prone to scarring.

Regardless of the cause, once scarring has begun to develop, it should be dealt with as rapidly and aggressively as possible. A mature scar is much more difficult to treat than a developing one. There are two different forms of scarring following chemical peels: hypopigmented flat scars with shiny surface and depressed scars with sharply defined edges. Delayed healing and persistent redness are early warning signs, and the use of topical antibiotics and potent topical non-fluorinated steroid creams should be started as soon as possible to minimize scarring.

Some patients will develop thickened and elevated scars with some surrounding erythema but which rarely becomes a true keloid scar.

Should a true scar develop, there are several treatment options as follows: massage and compression, silicone sheeting applied over the scar, intralesional steroid injections with 0.5 % clobetasol Temovate (Glaxosmithkline Consumer Healthcare LP, Pittsburgh, PA) or 10 to 40 % triamcinolone Kenalog (Bristol-Myers Squibb Company, New York, NY), spray or contact cryosurgery, mechanical dermabrasion, 585 nm pulsed dye laser or 1,320 nm holmium-YAG laser, radiation and scar excision and revision [1–5].

Spray or contact cryosurgery is a non-invasive treatment for hypertrophic and keloid scars. Several cryo-sessions will be needed to flatten these scars, but this therapy has been reported as having a high incidence of hypopigmentation, which in the face is unacceptable [2].

This case report describes the successful treatment of a large mature keloid of the upper lip following deep

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chemical peeling by employing a single intralesional cryosurgery procedure.

Case report

A 66-year-old healthy woman presented to our clinic with a large keloid scar of her upper lip measuring 5 cm in length, 1 cm in width, and 3 mm in height (Fig. 1a). The scarring had caused the upwards retraction of the right vermilion of the upper lip (Fig. 1a).

The patient had undergone an uneventful cervico-facial lift combined with perioral deep chemical peeling with phenol, 10 months before. She did not have in her medical history any predisposition to scarring. Three months post-operatively, the patient noticed the appearance of a thickened and elevated scar of her upper lip. This was treated by her surgeon with five intralesional steroid injections which in fact actually worsened the scar. The patient was distraught with her condition. Her upper lip movements were distorted, and she could not camouflage the scar with any makeup. She refrained from socializing and had the appearance of being a most unhappy patient [6].

Intralesional cryosurgery of the scar was proposed to the patient who agreed to be treated by this novel method [6–9]. The patient signed an informed consent form prior to treatment. Under translesional local anesthesia with Buvicaine 0.5 %, the cryo-probe (CryoShape, Etgar Group International Ltd., Kfar Saba, approved by the Israeli Ministry of Health, FDA and CE), which consists of an elongated double-lumen uninsulated needle with a safety vent and a closed sharp cutting tip, was inserted into the long axis and mid-height of the scar. It was connected to a liquid nitrogen canister (CryoPro Plus, 500 cc, Cortex Technology, Hadsund) by an elongation tube, and by activating the trigger of the canister, liquid nitrogen is pressurized to flow through the needle. This led to the formation of an ice ball which freezes the abutting scar tissue (Fig. 1b). The ice ball has extends beyond the scar borders for about 5 mm to create a halo (Fig. 1b). The cryoneedle is withdrawn at the end of the cryosurgical procedure.

A blister forms following the cryo-treatment and drains for about 1 week (Fig. 1c). Over a period of some 4 weeks following treatment, the scar healed by secondary intention. During the next 12 months, the scar gradually fattened and became paler (Fig. 1d). The contracture of the vermilion was significantly reduced and the upper lip movements were free. The patient could now camouflage the scar and was not concerned regarding her appearance in public. Her emotional distress has virtually disappeared.

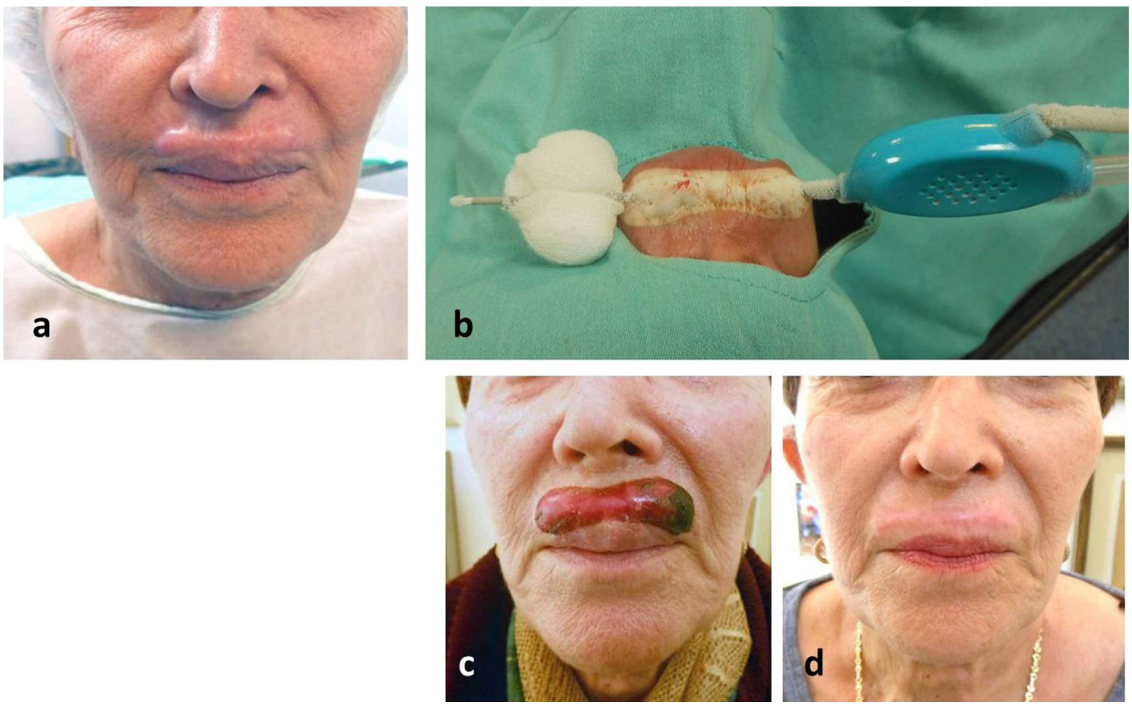

Fig. 1 **a** A pre-operative view of the keloid scar of the upper lip. The upwards retraction of the right vermilion of the upper lip is shown. **b** The cryo-probe needle is inserted into the keloid scar causing complete freezing of the scar. **c** Following the cryo-treatment, a blister has formed which drained for about a week. **d** Twelve months post-cryosurgery, the scar has flattened and became paler. The vermilion contracture is much reduced

Discussion

This case report describes the successful treatment by intralesional cryosurgery of an unsightly keloid scar of the upper lip following deep chemical peeling.

The incidence of emotional disturbances of patients in connection with aesthetic surgical procedures is reported to be 47.7 % in Japan and 50 % in France [6]. Patients undergoing elective aesthetic surgery have higher anxiety scores in comparison to patients undergoing plastic reconstructive surgery.

In the plastic surgery literature, only scant data exists concerning the prevalence of hypertrophic and keloid scars following aesthetic surgery and specifically associated with chemical peeling. Baker and Converse [10] have reported the development of keloid scars following protruding ear surgery with an incidence of 11 % in African American population compared with 2.1 % in Caucasians.

In a series of 119 patients, Leist [11] has revealed that following face lifting, 11.8 % of patients had complaints regarding scarring. It seems reasonable to assume that the development of hypertrophic and keloid scars following aesthetic surgery often leads to patient dissatisfaction and subsequent emotional problems.

The most common areas for scarring following chemical peels and other resurfacing procedures are around the mandible, over the bony prominences of the malar area, and perioral regions [3].

There are certain categories of patients which are in higher than normal risk for scarring even with properly applied peels. These include history of poor healing or keloid formation, deep peeling, repeated peels without adequate time for full healing in between peels, previous treatment with isotretinoin which causes the reduction of skin adnexal appendages and therefore may cause problems with re-epithelization, and patients who had previously developed infection at the peeling site.

This recently introduced intralesional cryosurgery procedure for the treatment of hypertrophic and keloids scars has been shown to be effective in the treatment of hypertrophic and keloids scars and has achieved significantly superior clinical results when compared with the other existing treatment modalities [6–9]. In addition, it has been shown that this method has significantly reduced patient concern and deformity scores in a scale from 1 (no concern and deformity) to 5 (severe concern and deformity) in 11 patients in whom keloids developed following aesthetic surgery. Intralesional cryosurgery provides the plastic surgeon with an effective method for treating such scars following aesthetic surgery, thus reducing patient dissatisfaction [6].

Intralesional cryosurgery has two main advantages over the spray or contact cryosurgery techniques. Usually, only a single cryo-session is needed and it exhibits much less hypopigmentation due to better survival environment for the melanocytes, thus can be more successfully used on black/darker-colored skin [7, 8]. These beneficial advantages have important clinical applications for the treatment of hypertrophic scars and keloids especially on the face, which is the most crucial area of concern for the patient. Furthermore, the usual treatment modalities which are mentioned above to treat such a scar necessitate several treatments and a long therapeutic period while the final results are unpredictable.

In summary, the intralesional cryosurgery technique adds to the armamentarium of treatment modalities to effectively treat keloid scars following deep chemical peels. This method is easy to use, safe, can be applied on any size and shape of scars, requires a short learning curve, consumes less liquid nitrogen, and can be performed as an office procedure.

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Ethical standards statement Patient gave her informed consent prior to her inclusion in the study. Details that might disclose the identity of the subject under study were omitted.

Conflict of interest The Author Har-Shai Y. has a financial interest in the Intralesional Cryosurgery technology.

Patient consent Patients provided written consent for the use of their images.

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