Treatment of xanthelasma palpebrarum with voltaic arc dermoabrasion

Article in European Journal of Inflammation · December 2012

See discussions, stats, and author profiles for this publication at: https://www.researchgate.net/publication/272355675

5 authors, including:

Antonio Scarano
Università degli Studi G. d'Annunzio Chieti e…
313 PUBLICATIONS  7,995 CITATIONS

Francesco Carinci
University of Ferrara
611 PUBLICATIONS  8,901 CITATIONS

Alessandra Lucchese
Università Vita-Salute San Raffaele
82 PUBLICATIONS  563 CITATIONS

Some of the authors of this publication are also working on these related projects:

- TiO2 and bone healing View project
- study of implantology View project

All content following this page was uploaded by Francesco Carinci on 17 February 2015.

The user has requested enhancement of the downloaded file.
TREATMENT OF XANTHELASMA PALPEBRARUM WITH VOLTAIC ARC DERMABRASION

A. SCARANO¹, G.L. BERTUZZI², B. BRANDIMARTE², F. CARINCI³, A. LUCHESE⁴

¹Department of Oral Science, Nano and Biotechnology, University of Chieti-Pescara, Italy
²Medical School, University of Tor Vergata, Rome
³Department of D.M.C.C.C., Section of Maxillofacial and Plastic Surgery, University of Ferrara, Ferrara, Italy
⁴Department of D.M.C.C.C., School of Dental Hygiene, University of Ferrara, Ferrara Italy

Xanthelasma palpebrarum is the most common form of xanthoma. The lesions appear as yellowish, flat, and soft and are located mostly at the medial angle of the eyelid (1). It is usually bilateral and is characterized by the development of yellowish plaques related to the presence of cholesterol. Lesions are initially situated in the medial canthus and gradually spread to all of the periorbital region in advanced forms (1). Histological examination reveals esterified cholesterol deposits situated in the cytoplasm of histiocytes in the middle and superficial layers of the dermis and epidermis is otherwise normal (1).

Although xanthelasma is a benign condition and almost never limits functioning; its appearance is often seen as cosmetically disturbing. Surgical excision has been the treatment of choice for decades. However, this normally effective measure bears a considerable risk of side effects, especially an ectropion, which could lead to additional procedures, e.g., full thickness skin graft. 13 patients with bilateral 26 xanthelasma with an voltaic arc dermoabrasion device (EL-Abras, TECNOSER s.r.l., Roma, Italy). Photographs were taken before and after treatment and were then evaluated by an independent observer. The evaluation of the results was made 2 months after this single treatment. The final evaluation assessed the presence or absence of hypochromic or achromic scars. The patients were given a single sessions to remove the lesions. Two months after treatment, the result was scored as 4 (i.e. with a clearing of lesions evaluated as being > 75% and in fact assessed by the independent observer as complete resolution) in six patients for a total of 12 lesions; scored as 3 in four patients for a total of 8 lesions, and as 2 in three patients for a total of 6 lesions. No patient presented a result scored as 0, 1 or 2. Eight lesions showed slight erythema in the treated areas and this persisted for 1 month. The visible and unsightly nature of xanthelasma has led to the proposal of numerous treatments. Reconstruction by a flap or full-thickness skin graft may be necessary in the presence of excessively large lesions or lesions involving the medial canthus. The possibilities of surgical resection appear to be more limited in the lower eyelid, as the more limited skin laxity rapidly induces a risk of ectropion. On the basis of our results, we would like to recommend xanthelasma treatment with the voltaic arc dermabrasion as an excellent therapeutic alternative to the hitherto described approaches.

Xanthelasma palpebrarum is the most common form of xanthoma. The lesions appear as yellowish, flat, and soft and are located mostly at the medial angle of the eyelid (1). It is usually bilateral and is characterized by the development of yellowish plaques related to the presence of cholesterol. Lesions are initially situated in the medial canthus and gradually spread to all of the periorbital region in advanced forms (1). Histological examination reveals esterified cholesterol deposits situated in the cytoplasm of histiocytes in the middle and superficial layers of the dermis and epidermis is otherwise normal (1).

Although xanthelasma is a benign condition and almost never limits functioning, its appearance is often seen as cosmetically disturbing. Surgical excision has been the treatment of choice for decades. However, this normally effective measure bears a considerable risk of side effects, especially an ectropion, which could lead to additional procedures, e.g., full thickness skin graft (2). Other treatments have been proposed due to the extension and unsightly nature of these lesions, including trichloroacetic acid (TCA) peeling, continuous or pulse mode CO2 lasers, erbium: YAG laser or pulsed dye laser, diode laser (3) (4) (5). However, these various treatment options present certain limitations. Recently, several case reports have described the successful treatment of xanthelasma with the carbon dioxide laser, mostly in

Key words: Xanthelasma palpebrarum, dermabrasion, electrosurgery, skin lesions.
compresses soaked in physiological saline (0.9% NaCl solution) completed by application of sterile petrolatum repeated several times a day until complete healing. Patients were reviewed after 2 months (Fig 3). Photographs were taken before and after treatment and were then evaluated by an independent observer. The evaluation of the results was made 2 months after this single treatment. The results were scored on a 0–4 scale: 0, no result; 1, moderate result (< 25% clearing); 2, satisfactory result (25-50% clearing); 3, good result (50–75% clearing); 4, excellent result (> 75% clearing). The final evaluation assessed the presence or absence of hypochromic or achromic scars.

RESULTS

The patients were given a single sessions to remove the lesions. The erosion is reepithelialized from the margins and from dermal basal cells. Two months after treatment, the result was scored as 4 (i.e. with a clearing of lesions evaluated as being > 75% and in fact assessed by the independent observer as complete resolution) in six patients for a total of 12 lesions; scored as 3 in four patients for a total of 8 lesions (Figs. 1-4), and as 2 in three patients for a total of 6 lesions. No patient presented a result scored as 0, 1 or 2. Eight lesions presented a result scored as 0, 1 or 2. Eight lesions showed slight erythema in the treated areas and this persisted for 1 month. Only one patient showed post-therapeutic hyperpigmentation in the treated areas and this persisted for 1 month. Only one patient showed post-therapeutic hyperpigmentation and this lasted for 3 months. We did not observe any complications such as haematomas, bleeding, infections, entropion or ectropion. No functional complications were encountered in these patients.

MATERIALS AND METHODS

Between November 2010 and June 2011, we treated 13 patients with bilateral 26 xanthelasmas (Fig. 1) with a voltaic arc dermoabrasion device (EL-Abras, TECNOSER s.r.l., Roma, Italy).

Hight of the lesions were larger than 1.0 cm², 6 lesions were <1.0 cm², 5 patients had extensive xanthelasmas (at least two xanthelasmas, both measuring >1 cm²). Before treatment, the eyelids were anaesthetized by intradermal infiltration of Articaine® (Ubistesin 4% - Espe Dental AG Seefeld, Germany) associated with epinephrine 1:100.000. The patients were advised to keep their eyes closed during the entire procedure. No protection the eye was necessary. Between 4-8 passes with voltaic arc dermoabrasion were made for the macroscopic removal of the lesions. Macroscopically, a sudden change of color (black) and texture shows that the bottom of the xanthelasma has been reached (Fig. 2). To soothe the typical post-therapeutic erosions, ophthalmic Vaseline was applied for 1 day together with anti-inflammatory. This immediate postoperative treatment was followed by topical antibiotic ointment for another 6-9 days. The patients were advised to not to touch at the delicate crusts and to avoid sun exposure and tanning booths for at least 6-8 weeks. Postoperative care consisted of cleaning the treated zone by

**Fig. 1. A 52-year-old female patient with xanthelasmas of both upper lids**
DISCUSSION

The visible and unsightly nature of xanthelasma has led to the proposal of numerous treatments. Reconstruction by a flap or full-thickness skin graft may be necessary in the presence of excessively large lesions or lesions involving the medial canthus. The possibilities of surgical resection appear to be more limited in the lower eyelid, as the more

Fig. 2. After a single treatment with the Voltaic arc dermoabrasion unit.

Fig. 3. Clinical appearance of the upper eyelids after treatment. Evaluation scale: 3, good result both treatment areas.
limited skin laxity rapidly induces a risk of ectropion (8). An additional problem is raised in the case of recurrence of xanthelasmas, as the eyelid skin capital does not allow repeated resections (8). In view of this last problem and in order to spare eyelid skin, the destruction of dermal layers containing cholesterol deposits by TCA peeling or CO2 or erbium: YAG laser vaporization and low-voltage radiofrequency (9) has also been proposed, but this could induce the development of hypochromic or achromic scars (10). In the present study, the results of treatment after a single session were encouraging, as a good or excellent result was obtained in eight of 13 cases, corresponding to a total of 16 of 26 lesions.

Electrosurgery is the application of an alternative electric current with a high voltage on a biological tissue with a thermal effect to achieve an incision or coagulation. The effect is related to the electrode type, contact area, electrode movement speed and tissue characteristics. The cut is due to the current passage through active and neutral electrodes and the coagulation occurs as a result of tissue atrophy or desiccation when their hating is sufficiently slow. Parameters assessment to obtain the desired results may be done manually or automatic (11).

Voltaic arc dermoabrasion of xanthelasmas may also have a decreased morbidity and shorter recovery time compared with other device. Because there are so few reported studies, further clinical studies looking at voltaic arc dermoabrasion and comparing to other modalities are necessary. The voltaic arc acts without getting in tip-tissue contact, creating a gentle coagulation. There is no electric passage zone, for this reason the dermoabrasion it is not influenced from the tissue electric resistance (7).

It would appear that there are several benefits associated with the use of this technology. These include complete hemostasis during the procedure, lack of a smoke plume, no need for eye protection required with laser procedures, and compact solid state technology. The present results deduce the possibility on containing the tissue thermal damage contiguous the lesion using the voltaic arc dermoabrasion technique. In preview study the authors were no observations of thermal damage on the underneath treated site dermal layer. The necrotic layer is almost absent on the healing process, while it could be seen an inflammatory infiltrate(7).

This to our opinion is due to the tissue current path absence and to the necessity on closing the circuit between the active and neutral electrode to which the patient is part when used a radio surgery unit. Voltaic arc dermoabrasion has the ability to burn selectively the conductive hydrated tissues (12). The electrons are substantially electric current, which can freely move through the human body without damaging it (low power), providing a hydrating (water, lymph or blood) contact point (skin) and being so a good conductor. This stream is irradiated from the dermoabrasion needle tip, which if finds a bed electricity conductor, tries to pass through and burns the fence. In conclusion, the voltaic arc dermoabrasion is a clever therapeutic option for the treatment of xanthelasma palpebrarum. It is advisable to treat as soon as diagnosed. The advantages of this method are the accurately controlled ablation of thin skin layers, the option for a repeated application in case of recurrences, the unproblematic and safe treatment in delicate regions of the periorbital area, and the low risk of visible scarring, as well as the low recurrence rate. Voltaic arc dermoabrasion treatment is principally an outpatient and fast procedure. Patients seem to tolerate the treatment well. On the basis of our results, we would like to recommend xanthelasma treatment with the voltaic arc dermoabrasion as an excellent therapeutic alternative to the Hitherto’s described approaches.

REFERENCES

cutaneous and aesthetic surgery; 3:127-128.