CASE REPORT: StarWalker VERDE for Treatment of Ephelides and Lentigo

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ABSTRACT

Long-pulsed KTP is a modality usually used for treatment of superficial vascular lesions, but it has been used also for removal of epidermal pigmented lesions such as ephelides and lentigos.

Three female patients, aged from 32 to 46 years, had facial pigmented lesions removed for aesthetic reasons. The removal of lentigines and ephelides was performed in a single treatment session using long-pulsed 532 nm KTP (VERDE, StarWalker, Fotona, Slovenia).

All three patients showed almost complete clearance of the lesions, and patient who received full-face treatment, presented with improved skin texture and tone. There were no adverse effects observed.

Three cases presented in this report show that use of long-pulsed KTP is safe and effective for removal of epidermal pigmented lesions and improvement of skin tone in patients with Fitzpatrick skin type III–IV.

Key words: StarWalker, VERDE, LP KTP, Pigmented Lesions, Ephelides, Lentigo.

I. INTRODUCTION

There are many types of pigmented lesions and each varies in the amount, depth, and density of melanin distribution [1]. The approach to the treatment of cutaneous pigmentation depends on the location of the pigment (epidermal, dermal, or mixed), and the way it is packaged (intracellular, extracellular) [1]. Many pigmented lesions are benign and are removed for aesthetic reasons only. However, some pigmented lesions have a high risk of malignant transformation. In general, epidermal pigment is easier to eradicate than dermal pigment because of its proximity to the skin's surface. The goal is to remove unwanted epidermal pigmentation, and as long as the injury is above the dermal-epidermal junction, it will heal without scarring [1].

Lentigines are epidermal pigmented lesions, and are extremely common hyperpigmented macules that most often result from chronic sun exposure [2]. They contain melanin within keratinocytes and melanocytes [1]. Histologically, melanocytes in the basal layer are increased in number without nesting and rete ridges are elongated [2]. Lentigines can be classified into several categories, including those due to chronic sun exposure (solar lentigines), those associated with a syndrome (e.g., Peutz-Jeghers), and the labial melanotic macule. Use of a broadband sunscreen helps prevent new lentigines from occurring as well as the recurrence of treated lesions [1]. Correct diagnosis is a primary concern when treating lentigines, as lentigo maligna should not be treated with laser [1].

Ephelides (freckles) are small hyperpigmented macules located on sun-exposed skin [2]. Histologically, there is hyperpigmentation of the basal layer but no increase in the concentration of melanocytes [2]. Patients who tend to freckle are more likely to develop new freckles with any sun exposure [1]. The use of a broadband sunscreen is therefore indicated [1].

There are several treatment options available for management and removal of pigmented lesions, from topical tretinoin, cryotherapy and various laser modalities [3]. Even though the long-pulsed (millisecond domain) 532 nm (KTP) (a frequency doubled Nd:YAG) laser is more commonly used to treat vascular lesions, it has been successfully used to treat superficial pigmented lesions, such as ephelides and lentigos [3–5]. The theory of selective photothermolysis suggests that laser therapy would be the treatment of choice because of its ability to selectively destroy pigment without injuring the surrounding tissue. Melanin is the main chromophore in solar lentigines, and therefore is the target of selective destruction [4]. Equally important in achieving selective photothermolysis of melanin is the pulse duration. Ideally, the pulse duration of the laser should be shorter than the thermal relaxation time of the target to achieve selective photothermolysis [4]. Q-switched and long-pulsed lasers differ in the effect on the target chromophore; the first one has a photothermal-mechanical effect, whereas the second one has a photothermal effect only. The photomechanical effect of Q-switched lasers is generally the accepted mode of
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action when treating the epidermal pigmented lesions, however it may not be desirable when treating the patients with higher Fitzpatrick (FP) skin types (especially IV and above) [4], as the incidence of pigmentary changes following the treatment, despite their transient nature, is higher when using Q-switched KTP laser in such patients [6]. Such patients may therefore benefit more from the long-pulsed laser application.

II. METHODS

Three female patients, aged from 33 to 47, with FP skin type (III–IV) are included in this case series. The exclusion criteria were: a history of photosensitivity or the use of photosensitizing medication, recent history of previous laser therapy at the planned treatment site, existing or planned pregnancy, diabetes, autoimmune disease, breastfeeding, acute skin diseases requiring dermatological treatment, or a history of malignant disease in the area to be treated. All patients signed informed consent for the treatment and for the use of data and photographs. All three patients wished to have their pigmented lesions located on the face removed for aesthetic reasons.

The treatment of choice was long-pulsed KTP laser (532 nm) (StarWalker, Fotona, Slovenia) using R58 handpiece. Post-treatment cooling with Zimmer Cryo 6 and ice packs was applied over the treated area. Patients were advised to apply creme containing dexpantenol (Bepanthen®, Bayer, Germany) couple times a day for the next two days. Patients were also advised to avoid sun exposure and to use sun protection. All patients were followed-up after 6 weeks to assess the effectiveness of the laser procedure and detect any potential side effect of laser treatment.

III. CASES

a) a) Case 1: VERDE for treatment of lentigines and rough skin texture

Case 1 is a 46 year old, FP skin type IV female patient with a complaint of lentigines and rough skin texture (Figure 2). The patient has previously received multiple Q-switched Nd:YAG laser treatments with unsatisfactory outcome, that has rendered the patient to stop with the treatments for few years.

Full face treatment with no overlapping was applied in a single session, using the parameters presented in Table 1. Treatment was performed without anesthesia. Immediate post-treatment cooling with Zimmer Cryo 6 and ice packs was applied over the treated area.

Fig 1: Case 1 – Patient complaining over lentigines and rough skin tone: before (left) and 6 weeks after single session (right)
b) Case 2: VERDE for removal of ephelides
Case 2 is a 35 year old, FP skin type III female with unwanted ephelides on her cheeks. After uneventful test spots, the ephelides were removed using the long-pulsed KTP (StarWalker, Fotona, Slovenia) and the parameters used are presented in Table 1.

Single non-overlapping pulse was applied directly over each lesion while stretching the skin. Treatment was performed without anaesthesia and no cooling was used during the procedure. Immediately after the procedure, the treated areas were cooled with Zimmer Cryo 6 and ice packs.

Fig 2: Case 2 – Patient complaining over ephelides before (left) and 6 weeks after single session (right)

c) Case 3: VERDE for removal of ephelides and solar lentigo
Case 3 is a 32 year old, FP skin type IV female with ephelides and a solar lentigo on her upper cheek, that she wished to have removed. Removal was performed with long-pulsed KTP (StarWalker, Fotona, Slovenia) using the parameters reported in Table 1.

Single non-overlapping pulse was applied directly over each lesion while stretching the skin. No anesthesia was needed or used, but immediate post-treatment with Zimmer Cryo 6 and ice packs were applied.

Fig 3: Case 3 – Patient complaining of ephelides and lentigo: before (left) and after 6 weeks after single session (right)
The effect of the procedure is evident in Case 1.

index matching for transition of laser energy to the target. 

most susceptible competing chromophore from the 

reported in the literature. In general the pressure diascopy 

hence also the fluences used were lower than those 

depends on spot size, pulse duration as well as the 

Skin cooling should not be used during the 

The endpoint of epidermal pigment treatment with VERDE should be a mild darkening or greying of the 

pigment, with no audible snap or aggressive scabbing of the 
pigmentation spots. In the literature there have been 
some reports of mild erythema and oedema present 
immediately after the treatment with long-pulsed KTP, 

In conclusion, we have shown that long-pulsed KTP 
can be safely and effectively used for removal of ephelides 
and solar lentigos in patients with FP skin type IV, with 
no long-lasting adverse effects. Full-face application of 
long-pulsed KTP can result in improved skin texture and tone.

REFERENCES


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