CLINICAL BULLETIN

No. 1

Simon Ourian, M.D.

GentleYAG™ and the Treatment of Hair Removal in Dark and Tanned Skin

Simon Ourian, M.D.

Epione Medical Corporation

Beverly Hills, California, USA

Introduction

Less than six years after their introduction to the market, lasers have quickly become one of the most popular methods of removing unwanted hair from the face and body. However, until recently, the use of lasers for people with darker skin had been limited. Conversely, darker-skinned populations suffer from a higher incidence of hair-related disorders, including hirsutism (excessive hair growth) and pseudofolliculitis barbae ("beardbumps"), a condition affecting up to 80% of African-American men who shave regularly. Due to a small therapeutic window, practitioners have tended to undertreat or not treat individuals with darker or tanned skins in the past.

Hence, laser hair removal treatments for these individuals have been largely ineffective or carried significant side effects including purpura or pigmentation changes. The GentleYAG laser with a wavelength of 1064 nm takes advantage of the corresponding decrease in melanin absorption. Less melanin absorption provides reduced epidermal heating and damage, and therefore the ability to treat a wider range of patients (dark as well as light-skinned types). Longer wavelength also contributes to reduced scatter and deeper penetration of the light so that more energy is delivered to the target. Use of the cryogen spray cooling methodology the Dynamic Cooling Device™ (DCD™) has been shown to impact patient comfort and decrease the risk of epidermal damage.

Method

After signing an informed consent form a thin layer of Epione™ numbing cream (Lidocaine 6%, Tetracaine 4%) was applied on the face of the patients (Fitzpatrick skin types 4-6) for 15 minutes. The entire face was then cleaned and shaved completely. Patients were treated with the GentleYAG laser using 12 mm spot. The 1064 nm wavelength, 3 ms pulse duration laser was used, between 25-40 J/cm^2 with the DCD setting at 40 ms and a delay of 30 ms. The entire involved area was treated in each session. A thin layer of hydrocortisone 1% was then applied to the treated skin and left on for three hours. Two treatments with similar parameters, and six weeks apart, were performed on each individual.

Results

There was a greater than 60% reduction of the unwanted hair in all 52 patients treated 90 days after the last treatment. There was complete clearance in all cases. There was no post-operative edema, swelling, or purpura. A transient erythema was noticed in lighter- skinned individuals (skin type IV). There were no other side effects noted in any of these patients.

GentleYAG™ with DCD

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Discussion

The first detailed studies of laser hair removal were published less than a decade ago based on the results obtained from the use of a 694 nm pulsed ruby laser. Since that time, the trend in hair removal lasers has been towards longer wavelengths, combined with aggressive skin cooling. Alexandrite lasers at 755 nm, diode lasers at 810 nm, and now the Nd:YAG laser with a wavelength of 1064 nm followed ruby lasers. Nd:YAG lasers have the advantage of less melanin absorption which leads to reduced epidermal heating and damage, the ability to treat a wider range of patients (darker skin types as well as light), and the ability to use higher fluences. Additional advantages of the longer wavelength are reduced scatter and deeper penetration of the light so that more energy is delivered to the target. The DCD has been shown to deliver an aggressive and superior skin-cooling technique. The 12 mm spot size (the largest among Nd:YAG lasers) also contributes to a deeper penetration of light, as well as, providing speed to the procedure.

Although there are other lasers that are highly effective in treating light-skinned individuals, the GentleYAG was chosen to treat darker-skinned individuals with unwanted hair because of its effectiveness and safety. The incidence of post-laser hyperpigmentation and side effects is considered to be higher amongst darker-skinned patients. There have been no reports in the literature of scarring or hyperpigmentation with Nd:YAG lasers and no evidence in our treatments.

In summary, the GentleYAG laser appears to be an exceptionally effective modality for the long-term removal of unwanted hair in all skin types and/or tanned-skin individuals. There are minimal post-laser side effects and very little risk of adverse effects.

Figure 1—Pretreatment

Figure 2—Post-treatment

Candela Corporation
530 Boston Post Road
Wayland, MA 01778, USA
Phone: (508) 358-7637
Fax: (508) 358-5569
Toll Free: (800) 821-2013
www.clzr.com

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