CLINICAL BULLETIN

No. 9

Prof. Akira Kawada *Dr. Natusko Konishi*

Acne Treatment with Smoothbeam® 1450 nm Diode Laser: An Open Study

Professor Akira Kawada and
Dr. Natusko Konishi
Department of Dermatology,
Kinki University School of Medicine
Osaka, Japan

Introduction

The most common form of acne is called *acne vulgaris* and is characterized by inflammatory lesions (pimples) that develop when sebaceous glands become obstructed and there is an abnormal proliferation of *propionibacterium acnes* (*P. acnes bacteria*).

Acne vulgaris affects between 85% of individuals between the ages of 12 and 24 years old at some point in their lives. However, adults can also suffer with acne, making it the most common dermatological disorder among patients.

Various modalities have been used to try to treat this condition with various degrees of success or failure; those most commonly used are topical and oral antibiotics and retinoic acids, which rely on patient compliance. Another treatment that is being explored more frequently as of late is blue light phototherapy. Blue light therapy emits a 415 wavelength, which is able to kill surface bacteria; however, it does not penetrate deeply enough into the skin to have any effect on lesions, nodules or cysts.

The goals of any treatment are to heal existing lesions, stop new lesions from forming, prevent scarring, and minimize the psychological stress and embarrassment caused by this disease. We undertook a study to investigate the efficacy of the Smoothbeam 1450 nm diode laser for treating patients with mild-to-moderate acne. Because the 1450 nm wavelength corresponds to the peak of absorption spectrum of water in the dermis, the target chromophore is collagen and the sebaceous gland in the mid dermis. Histopathological studies reveal that this laser causes thermal damage to both collagen[1] and the sebaceous gland. Additionally, we hypothesize that the 1450 nm diode may remodel the collagen, form new collagen, and suppress the activity of sebaceous glands following an improvement of acne and acne scar tissue.

Our study included 27 female patients with mild-to-moderate acne lesions involving areas of the face, back or chest. To qualify, all patients had to have between 15 and 100 inflammatory or noninflammatory lesions and no more than three nodules. No medication was administered four weeks prior to the study, and the average patient age was 23.

Patients were treated with Smoothbeam diode laser using the 6 mm spot size, and a fluence level of 12.5 J/cm^2. Treatments were given up to five times at two week retreat intervals with no topical anesthetic. Patients did not use oral or topical antibiotics during the study.

We treated patients over the course of 10 weeks, performing clinical assessments five times at weeks zero, two, four, six, eight and 10. Assessments were based on the number of lesions (papules, cysts, pustules, nodules) present, and secondarily an investigators global improvement in rating

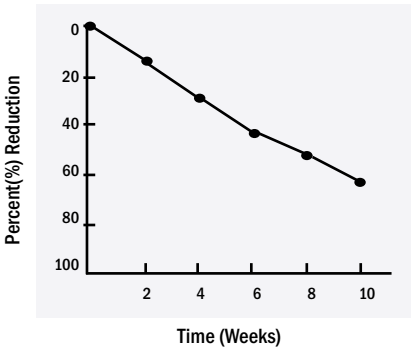
Smoothbeam with DCD

based on a five-point scale (-1=worsened; 0=no improvement; 1=improved; 2=markedly improved; 3=resolved). Treatment tolerance was assessed by patient interview in combination with observation of any adverse reaction to treatment.

The number of lesions before treatment was 23.8 ± 18.1 (mean ± SD) (n=27). Following treatments, lesion counts were: 20.5 ± 14.1 at two weeks after one treatment (n=27); 17.1 ± 13.9 at four weeks after two treatments (n=26); 13.5 ± 12.9 at six weeks after three treatments (n=22); 11.5 ± 10.1 at eight weeks after four treatments (n=18); and 8.8 ± 7.5 at 10 weeks after five treatments (n=13). Utilizing the parameters identified above, we were able to achieve a marked reduction in the number of lesions present by 13.9%, 28.2%, 43.3%, 51.7% and 63%, respectively (Table 1).

All patients reported feeling pain during treatment, two patients felt moderate pain and 25 felt slight pain. No patients discontinued the study because of pain from this modality. Post-treatment erythema and slight edema were immediately present, and resolved within 24 hours.

Table 1: Counts of Lesions (mean percentage reduction)



Smoothbeam demonstrated a marked effect on mild-to-moderate acne lesions and was well tolerated. The reduction of the number of skin lesions was 51.7% at week eight and 63.0% at week 10. Ninety-six percent of patients showed improvement by week 10 and expressed a high satisfaction with their treatment results.

In this study, Smoothbeam demonstrated efficacy for treatment of nodules and cysts, as well as papules and pustules with minimal adverse effects. Moreover, this laser therapy has shown significant long-term clinical remission after treatment[2] of up to 12 months.

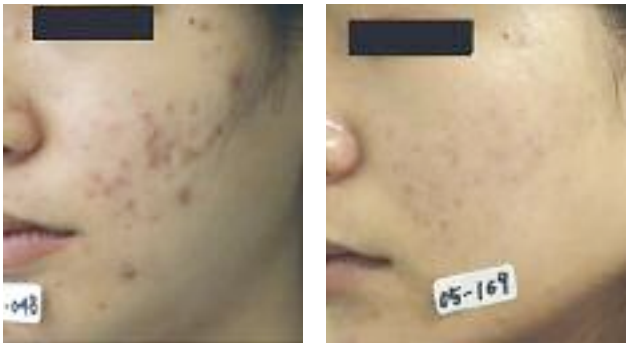


Figure 1. **Female, age 20, marked clinical improvement.**

Figure 2. **Female, age 28, marked clinical improvement.**

Figure 3. **Female, age 21, marked clinical improvement.**

References

1. Paithankar DY, Ross EV, Saleh BA, et al. Acne treatment with a 1450-nm wavelength laser and cryogen spray cooling. *Lasers Surg Med*, 2002; 31:106–14.

2. Jih MH, Friedman PM, Goldberg LH, et al. The 1450-nm diode laser for facial inflammatory *acne vulgaris*: dose response and 12-month follow-up study. *J Am Acad Dermatol*, 2006; 55:80–7.

Treatment parameters are subject to change—please consult your sales representative or clinical consultant, or visit www.mycandela.com to obtain current information regarding the use of your Candela device.

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

CANDELA®