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# Skin Photo Rejuvenation with the BEAMAX MAXrejuvenate 580 nm

Dr. Rubinstein and Dr. Kipnis, AML Clinics, Israel



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The recent rapid growth in non-ablative, aesthetic, light-based treatments has led to an increased demand for devices that treat a range of skin conditions, such as pigmented lesions, vascular lesions and textural imperfections. Pulsed Light technology improves the texture and appearance of skin affected by age, sun exposure and environmental pollution. Non-ablative pulsed light treatments are effective for all age groups and for all skin types.

This paper documents our preliminary experience in performing skin photorejuvenation on 80 patients with a new Pulsed Light device, the Sharplight Medic Beamax, fitted with the MAXrejuvenate 580nm handpiece.

## Introduction

Ablative skin rejuvenation techniques such as dermabrasion, laser resurfacing or chemical peels are known to be associated with long, uncomfortable convalescence and a high incidence of adverse side effects and complications.

Non-ablative skin rejuvenation, using lasers, pulsed light or RF devices have therefore become popular with younger, busier patients seeking no-downtime procedures. Each patient has unique demands and expectations when considering skin rejuvenation. The initial goal of the physician should be to understand these needs and to orient patients to the treatment modality that will provide them with the most satisfactory results.

The theoretical basis of skin photorejuvenation lies in the theory of Selective Photothermolysis combined with the phenomenon of neocollagenesis which occurs in response to a mild thermal injury in the reticular and papillary dermis. In our study we first evaluated the condition of the skin for any pigmented disturbances, vascular abnormalities, wrinkles, or signs of cutaneous sagging. This global assessment allows for an appropriate treatment proposal.

Patients referred to pulsed light Beamax treatment were those with predominantly mottled pigmentation, solar lentigo, Telangiectasia, facial erythema, Rosacea, rhytids and large pores.

Anatomical sites treated included the face, neck, chest and hands; sites which reveal the patient's age and extensive sun exposure.

The system used for photoepilation was the Beamax intense pulsed light system with:

## Materials and Methods

- \* Long pass filter of 580 nm (MAXreduction hand piece)
- \* Spot size of 6.4 cm<sup>2</sup>
- \* Fluence range from: 5 to 20 J/cm<sup>2</sup>
- \* Pulse durations: 10, 12, and 15 msec.

Treatments were conducted at two American Laser Clinics sites between October 2005 and July 2006. Eighty (80) subjects aged 28 to 74 (average age 34.6), 78 females and 2 males, with skin types I-V were subjected to an average of 4.3 treatments spaced 4 weeks apart. Subjects returned 48 hours after each treatment to assess immediate effects and any potential complications, and were followed up at 3 months after the last treatment to evaluate results and patient satisfaction with the procedure. Subjective clearance percent was assessed by the physician by comparing pre and post treatment photographs while patients evaluated their results by assigning a grade of 1 to 5, 1 indicating no result and 5 indicating a very good result.

Prior to treatment, patients filled a medical history form and were questioned to rule out any contraindication to photorejuvenation. Contraindications include tanning of the area within the past 3-4 weeks, use of Accutane within the past 6 months, history of hypertrophic scarring or Keloid formation and any skin condition or medications with sensitivity to light. A history of herpes requires use of prophylaxis prior to treatment.

A test spot was first performed on an adjacent area to determine optimal fluence and pulse duration parameters that would result in mild, diffused erythema and edema without any adverse effect (Fig 2). For darker skin types a waiting period of 24-48 hours is recommended to avoid an unexpected delayed response. Once optimal treatment parameters were determined, two passes were performed over the treatment area, apart from the neck and chest areas where treatment was limited to a single pass per session. Full face patients were offered topical anesthesia based on their response to the test spots. Cooling of the skin during treatment was maintained with cold, transparent ultrasound gel or with a flow of cold air (Zimmer, Germany). In patients with predominantly vascular lesions it may be preferred not to cool the area in order to avoid

vasoconstriction of the targeted blood vessels. For the same reason the light guide should be floated gently over the skin, without any pressure. Following the procedure it is recommended to cool the area well for 10-15 minutes in order to avoid adverse effects.

Pigmented lesions should darken almost immediately and will exfoliate within a few days.

The parameters most commonly used for the test and treatment procedures and for the different Fitzpatrick skin

types are listed in tables 1 and 2. It is generally advisable to perform the first session with somewhat lower settings and to gradually increase the settings from session to session, based on individual patient response.

Pulse durations should generally be set as short as possible, pending patient's skin response. Short pulses are more effective but also more aggressive to the skin so with darker skin types there is usually a need to use longer pulses in order to avoid adverse effects.

Table 1. Test Protocol

| Fitzpatrick Skin Type | Handpiece (nm)        | Pulse Durations (msec) | Fulence (J/cm <sup>2</sup> ) | Waiting Period | No.of passes* |
|-----------------------|-----------------------|------------------------|------------------------------|----------------|---------------|
| I-III                 | MAXrejuvenate 580-950 | 10-12msec              | 10-12J/cm <sup>2</sup>       | 30 min         | 2             |
| IV-VI                 | MAXrejuvenate 580-950 | 15msec                 | 8-10J/cm <sup>2</sup>        | 24-48 hours    | 2             |

Table 2. Treatment

| Fitzpatrick Skin Type | Handpiece (nm)        | Pulse Durations (msec) | Fulence (J/cm <sup>2</sup> ) | Waiting Period | No.of passes* |
|-----------------------|-----------------------|------------------------|------------------------------|----------------|---------------|
| I-III                 | MAXrejuvenate 580-950 | 10-12msec              | up to 16 J/cm <sup>2</sup>   | none           | 2             |
| IV-VI                 | MAXrejuvenate 580-950 | 15msec                 | up to 16 J/cm <sup>2</sup>   | none           | 2             |

\*On the neck and chest only one pass is indicated.

Solar lentigo of a 66 year old patient



three weeks after one treatment



Figure (1) Solar Lentigo On The Hands

Fine wrinkles pre-op

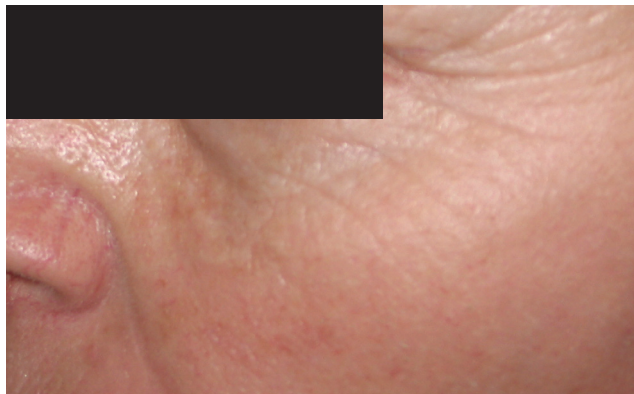


Figure (2)

Before



Figure (3)

Fine wrinkles 5 minutes after treatment



Three weeks after one treatment



## Results

On the majority of patients (89%) a subjective clearance rate of between 60% to 90% was assigned by the treating physician.

These results were in line with expectations based on published pulsed light photorejuvenation results. In some patients results were above expectation possibly due to a new Pulse Form technology incorporated in the Beamax pulsed light system.

Adverse effects, mostly crusting, were minimal (2.4% of the patients) and resolved spontaneously within a few days. No hypo or hyperpigmentation complications occurred. Patient assessment of the results is summarized in Table 3. Overall patient satisfaction was high.



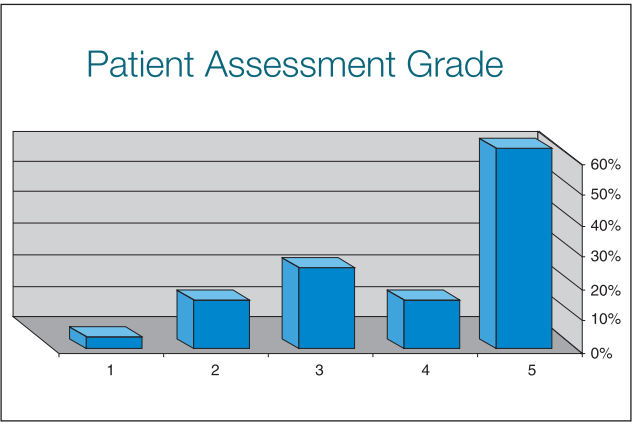


Table 3. Patient Assessment

Conclusions

Our clinical results with the Beamax system are in line with other publications describing the use of intense pulsed light in the treatment of sun damaged, aging skin. The first such publication by Bitter PH (2000), reported results on all aspects of photodamage including wrinkling, skin coarseness, irregular pigmentation, pore size, and Telangiectasias. The author achieved visible improvement in more than 90% of subjects with minimal downtime and no scarring. Eighty-eight percent of subjects were satisfied with the overall results of their treatments.

Weiss RA, et al (2002) reported long term follow up results on 80 patients treated by IPL photorejuvenation during the period 1996 to 1997. At 4 years following initial treatment, skin textural improvement was noted in 83% of the subjects. Telangiectasias were improved in 82% of subjects, while pigmentation remained improved in 79%.

Sadick NS, et al (2004) also confirmed that IPL treatment is an effective non-invasive, non-ablative method for rejuvenating photo aged skin with minimal adverse events, no downtime, excellent long-term results, and a very high measure of patient satisfaction.

The high measure of patient satisfaction, as found in our own study, was also noted by Fodor L. et al, (2004) who reported good to very good results in 93.1 percent of their patients.

The safety and low complication rates associated with pulsed light skin rejuvenation is of particular significance when treating dark skin and Asian patients. Negishi K. et al (2001) found that full-face photorejuvenation for Asian patients using an IPL device is not only effective but is also associated with fewer post-treatment complications than other more invasive modalities. They concluded that IPL photorejuvenation can be the basis for safe and effective skin rejuvenation in Asian patients.

In our experience the new Beamax system demonstrates similar clinical efficacy and safety in reducing pigmented sun damage, vascular irregularities, and in textural improvement. A great deal of experience is required when using IPL technology for photo rejuvenation. Proper patient selection and critical diagnostics serve to keep the adverse effects of the treatment to a minimum. Both patients and physicians should define realistic expectations for this treatment modality. While highly effective for dyschromia, patients seeking remedy for extensive wrinkles and skin laxity should consider more aggressive procedures such as laser resurfacing or plastic surgery.

Alternatively, a combination of pulsed light photorejuvenation with Botox and dermal fillers may allow satisfactory results for these patients while still maintaining the advantage of a no-downtime, low risk procedure.

References

1. Adatto MA, Photorejuvenation of the forearms by treating hyperpigmented lesions with intense pulsed light source: a case report., *Journal of Cosmetic and Laser Therapy*, 2003 Jun; 5(2):117-9,
2. Bitter PH., Noninvasive rejuvenation of photodamaged skin using serial, full-face intense pulsed light treatments. *Dermatol Surg*. 2000 Sep;26(9):835-42; discussion 843
3. Bjerring P, Clement M, Heickendorff L, Lybecker H, Kiemann M. Dermal collagen production following irradiation by dye laser and broadband light source. *Journal of Cosmetic Laser Therapy* 2002; 4(2):39-43

4. Brazil J, Owen P. Long-term clinical results of photorejuvenation. *J. Cosmet. Laser Ther.* 2003 Dec; 5(3-4):168-74.
5. Dierickx CC, Anderson RR. Visible light treatment of photoaging. *Dermatol Ther.* 2005 May-Jun;18(3):191-208
6. Fodor L, Peled IJ, Rissin Y, Ramon Y, Shoshani O, Eldor L, Gaiman A, Ullmann Y. Using intense pulsed light for cosmetic purposes: our experience. *Plast Reconstr Surg.* 2004 May;113(6):1789-95
7. Goldberg DJ, Cutler KB. Nonablative treatment of rhytids with intense pulsed light. *Lasers Surg. Med.* 2000;26(2):196-200.
8. Goldman MP, Weiss RA, Weiss MA. Intense pulsed light as a nonablative approach to photoaging. *Dermatol Surg.* 2005 Sep;31(9 Pt 2):1179-87; discussion 1187
9. Hedelund L, Due E, Bjerring P, Wulf HC, Haedersdal M. Skin rejuvenation using intense pulsed light: a randomized controlled split-face trial with blinded response evaluation. *Arch Dermatol.* 2006 Aug;142(8):985-90
10. Kligman DE, Zhen Y. Intense pulsed light treatment of photoaged facial skin. *Dermatol Surg.* 2004 Aug;30(8):1085-90
11. Laury D. Intense pulsed light technology and its improvement on skin aging from the patients' perspective using photorejuvenation parameters. *Dermatol Online J.* 2003 Feb;9(1):5
12. Negishi K. et-al. Photorejuvenation for Asian skin by intense pulsed light. *Dermatol. Surg.* 2001 Jul; 27(7):627-31; discussion 632.
13. Peter Bjerring, *Medical Laser Application*, Volume 19, Number 4, December 2004, pp. 186-195(10). Urban & Fischer.
14. Ross EV, Smirnov M, Pankratov M, Altshuler G. Intense pulsed light and laser treatment of facial telangiectasias and dyspigmentation: some theoretical and practical comparisons. *Dermatol Surg.* 2005 Sep;31(9 Pt 2):1188-98.
15. Ross EV. Laser versus intense pulsed light: Competing technologies in dermatology. *Lasers Surg Med.* 2006 Apr;38(4):261-72
16. Sadick NS, Weiss R, Kilmer S, Bitter P. Photorejuvenation with intense pulsed light: results of a multi-center study. *J. Drugs Dermatol.* 2004 Jan-Feb; 3(1):41-9.
17. Sadick NS, Weiss R. Intense pulsed-light photorejuvenation. *Semin Cutan Med Surg.* 2002 Dec;21(4):280-7
18. Weiss RA, Weiss MA, Beasley KL. Rejuvenation of photoaged skin: 5 years results with intense pulsed light of the face, neck and chest. *Dermatol. Surg.* 2002 Dec;28(12):1115-9.