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Hair Removal Procedures Using the Beamax Aesthetic System

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Introduction

The use of light-based aesthetic devices has expanded dramatically over the past decade. Applications for these devices range from anti-aging skin rejuvenation to acne phototherapy, elimination of vascular and pigmented lesions, and photoepilation, which has become the "gold standard" for aesthetic hair removal. This rapid growth in demand for aesthetic, light-based devices has led to substantial investment in the development of more effective and safer systems. Sharplight Medic's new Beamax system is the result of such research and development efforts. This article summarizes Sharplight Medic's experience with the Beamax system in photoepilation on 80 subjects.

Materials and Methods

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

- * Long pass filter of 635 nm (MAXreduction hand piece)
- * Spot size of 6.4 cm²
- * Fluence range from: 5 to 20 J/cm²
- * Pulse durations: 30, 40, and 50 msec.

Treatments were conducted at two American Laser Clinics sites between September 2004 and May 2006. Eighty (80) subjects, aged 16 to 50, with skin types I-IV, classified according to Fitzpatrick skin typing, were treated for hair removal on different anatomical sites, which included: axilla, legs, bikini lines, hands, back, shoulders, and abdomen. Of the 80 patients, 39 were male and 41 were female. The majority of the subjects, 91%, were under 35 years of age (see Table 1). The photoepilation procedures that were followed were the standard clinical procedures of American Laser Clinics, where both Beamax pulsed light and a diode laser (Light Sheer, Lumenis) are routinely used for photoepilation.

Table 1. Distribution of Patients by Age

Age Group	male patients	Female patients
16-25	15	18
26-35	20	20
>35	4	3

All subjects completed a medical history form and were screened for any contraindications. They were briefed on the procedure, potential complications, and realistic expectations, and then signed an informed consent form. For subjects under 18 years of age, a parent was asked to provide consent and sign the consent form.

Areas designated for treatment were then photographed and shaved. No topical anesthesia was applied. A test was conducted to determine optimal treatment parameters for each patient and treatments were administered with the aid of a cold air flow (Zimmer) to both anesthetize and protect the skin. In most cases, the various skin types were treated as follows:

- * **Skin type I:** Fluence range of 16-18 J/cm² and pulse durations of 30 or 40 msec.
- * **Skin types II:** Fluence range of 14-16 J/cm² and pulse durations of 30 or 40 msec.
- * **Skin types III:** Fluence range of 12-14 J/cm² and pulse durations of 40 or 50 msec.
- * **Skin type IV:** Fluence range of 8-12 J/cm² and pulse duration of 50 msec.

Subjects went through a series of treatment sessions spaced 4-12 weeks apart, depending on anatomical site and stage of treatment. Treatments were continued until subjects were satisfied with the results or until no further reduction was evident.

Using labels with fixed square openings affixed to the same skin area, hair counts were performed before the first treatment, before the second treatment, and three months after the final treatment session. Side effects of the treatment, such as pain or excessive erythema, as well as any adverse effects, such as burns, hypo pigmentation, hyper pigmentation, or induced hair growth, were recorded. The subjective overall satisfaction of the patient with the results was also noted.

Results

The average single and multiple sessions treatment results on various anatomical sites and subject's gender are summarized in Table 2. The number of treatment sessions required to achieve final results ranged from six to nine,

depending on site, hair characteristics, skin type, gender, and age. 90% of female patients and 80% of male patients could comfortably bear the treatment pain or were not significantly affected by a feeling of pain. No adverse effects were recorded in this series of treatments apart from transient erythema. Of the 80 patients treated, 53 (64.6%) were very satisfied with the results, 17 (20.7%) were satisfied, and 10

(14.6%) were not satisfied. No significant difference was noted between male and female patients.

Table 2 shows the distribution according to the parameters of the first treatment results and the entire treatment series. The table is divided into treatment areas and the results are listed as percentages.

Table 2. Distribution According to Treatment

Body Part Treated	1st Treated results	Final result %	Male	Female
Arm pits	20%	95%	Similar Results	Similar Results
Bikini line	15%	90%	Similar Results	Similar Results
Legs	15%		75%	95%
Facial	15%	90%	Similar Results	Similar Results
Arms	10%	80%	Similar Results	Similar Results
Shoulders	5%		70%	No treatment
Upper chest	15%	80%	Similar Results	Similar Results
Abdominal area	15%	80%	Similar Results	Similar Results
Back	15%	80%	Similar Results	Similar Results

Conclusion

Our initial experience with the Beamax 635 nm MAXreduction system, as reported above, resulted in very satisfactory hair reduction results with no substantial adverse effects. The percentage of hair reduction obtained is equivalent to previous results obtained with systems like the Light Sheer diode laser system, as well as results typically reported with both laser and intense pulsed light systems. The single session hair reduction percentage reported here is somewhat

lower than typically reported (20-30%), possibly due to our preference to perform the first session with more conservative parameters and increase treatment aggressiveness in subsequent treatment sessions.

As for complications and adverse effects, these were particularly low in this group of patients. This low complication rate may be due to the lack of very dark skin patients (type V and VI) and to the use of the Zimmer cold air system on all patients treated.

Figure 1 and Figure 2 show the results of hair reduction three months after the previous procedure.

Before



After



Figure 1. Results of Hair Reduction (Three Months after Last of Seven Procedures)

Before



After



Figure 2. Results of Hair Reduction (Three Months after Last of three Procedures)

Summary

Photoepilation using lasers and intense pulsed light systems has become the treatment of choice for patients on any body site where aesthetic removal of hair is desired. Hair reduction results of 60% to 95%, depending on anatomical sites and individual patient response, are achievable. Sites which respond best are axilla, bikini lines, and legs.

In particular, on sites such as men's shoulders and female chin and side burns, induced hair growth may occur as a result of photoepilation. Treatment in these areas should therefore be limited to patient whose hair is of significant aesthetic concern and the patient is willing to accept the risk.

Other major complications are skin pigmentary changes, hyper or hypo pigmentation. These occur mostly in darker

patients, skin types IV-VI, and usually as a result of a slight burn combined with excessive sun exposure following skin exfoliation. Effective epidermal cooling, before, during, and after light administration, is often critical in avoiding such complications. In this group of patients, only the 635 nm MAXreduction hand piece of the Beamax, which delivers a light spectrum of 635-950 nm was used.

For light skin patients (type I-III), who usually have lighter, thinner hair, better hair removal results can usually be obtained using the 570 nm head, which delivers shorter wavelengths with higher absorption in melanin.

Finally, patient selection is of paramount importance for achieving satisfactory hair reduction results with an acceptable complication rate. Patients with any contraindications should be carefully screened and those accepted for treatment should be advised to report any change in their medical condition that occurs during the relatively long period of treatment. Additionally, patients with vellus hair or with hair that is too light for photoepilation should be rejected.

Finally, patients should be carefully advised on the length of treatment, potential complications, and expected results in order for them to establish realistic expectations, without which patient satisfaction is rarely achieved.

References

1. Bukhari IA., Photo-epilation: guidelines for care from the European Society for Laser Dermatology (ESLD). *J Cosmet Laser Ther.* 2006 Jun; 8(2):107.
2. Amin SP, Goldberg DJ., Clinical comparison of four hair removal lasers and light sources. *J Cosmet Laser Ther.* 2006 Jun; 8(2):65-8.
3. Warner J, Weiner M, Gutowski KA., Laser hair removal. *Clin Obstet Gynecol.* 2006 Jun; 49(2):389-400.
Haedersdal M, Wulf HC., Evidence-based review of hair removal using lasers and light sources. *J Eur Acad Dermatol Venereol.* 2006 Jan; 20(1):9-20. Review.
4. Toosi P, Sadighha A, Sharifian A, Razavi GM, A comparison study of the efficacy and side effects of different light sources in hair removal. *Lasers Med Sci.* 2006 Apr; 21(1):1-4.
5. Hee Lee J, Huh CH, Yoon HJ, Cho KH, Chung JH., Photo-epilation results of axillary hair in dark-skinned patients by intense pulsed light: comparison between different wavelengths and pulse width. *Dermatol Surg.* 2006 Feb; 32(2):234-40.
6. Shapiro J, Lui H., Treatments for unwanted facial hair. *Skin Therapy Lett.* 2005 Dec-2006 Jan; 10(10):1-4. Review.
7. Haedersdal M, Wulf HC., Evidence-based review of hair removal using lasers and light sources. *J Eur Acad Dermatol Venereol.* 2006 Jan; 20(1):9-20. Review.
8. Fodor L, Menachem M, Ramon Y, Shoshani O, Rissin Y, Eldor L, Egozi D, Peled IJ, Ullmann Y., Hair removal using intense pulsed light (EpiLight): patient satisfaction, our experience, and literature review. *Ann Plast Surg.* 2005 Jan; 54(1):8-14. Review.

9. El Bedewi AF., Hair removal with intense pulsed light. *Lasers Med Sci.* 2004; 19(1):48-51.
10. Lepselter J, Elman M., Biological and clinical aspects in laser hair removal. *J Dermatolog Treat.* 2004 Apr; 15(2):72-83. Review.
11. Marayiannis KB, Vlachos SP, Savva MP, Kontoes PP., Efficacy of long- and short pulse alexandrite lasers compared with an intense pulsed light source for epilation: a study on 532 sites in 389 patients. *J Cosmet Laser Ther.* 2003 Dec; 5(3-4):140-50.
12. Schroeter CA, Groenewegen JS, Reineke T, Neumann HA., Ninety percent permanent hair reduction in transsexual patients. *Ann Plast Surg.* 2003 Sep; 51(3):243-8.
13. Raulin C, Greve B, Grema H., IPL technology: a review. *Lasers Surg Med.* 2003; 32(2):78-87. Review.
14. Moreno-Arias G, Castelo-Branco C, Ferrando J., Paradoxical effect after IPL photoepilation. *Dermatol Surg.* 2002 Nov; 28(11):1013-6; discussion 1016.
15. Moreno-Arias GA, Castelo-Branco C, Ferrando J., Side-effects after IPL photoepilation. *Dermatol Surg.* 2002 Dec; 28(12):1131-4.
16. Sadick NS, Weiss RA, Shea CR, Nagel H, Nicholson J, Prieto VG., Long-term photoepilation using a broad-spectrum intense pulsed light source. *Arch Dermatol.* 2000 Nov; 136(11):1336-40.
17. Sadick NS, Shea CR, Burchette JL Jr, Prieto VG., High-intensity flashlamp photoepilation: a clinical, histological, and mechanistic study in human skin. *Arch Dermatol.* 1999 Jun; 135(6):668-76.