

Acne Clearance Treatments with Trios™

Three Month Follow-Up Study

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ABSTRACT: The following study evaluates the Trios™ Intense Pulsed Light (IPL) system for the application of Acne Clearance. Twenty three patients with mild to moderate acne, underwent two treatments per week for 4 weeks using the Trios™ Acne Clearance applicator with a wavelength of 400-1200nm. Average fluence of pulses was 5J/cm² with pulse duration of 25 msec. At 3 months evaluation follow up 83% of the patients experienced significant clearance (> 75%) while 17% demonstrated moderate clearance (50% - 75%) compared to baseline. Overall average clearance of acne lesions was 88.83%. Patients also showed visible improvement in skin texture, tone and complexion. No adverse effects were reported, except for mild and transient erythema.

Introduction

Acne Vulgaris is an exceedingly common chronic skin disorder that affects approximately 40 million adolescents in the U.S. alone and comprises more than 30% of all dermatological visits⁽¹⁾⁽²⁾. The disorder is localized to skin regions with a high number of sebaceous follicles such as the face, back and chest⁽³⁾. Acne Vulgaris may lead to long-term scarring and disfigurement, and often contributes to a state of psychological distress, social withdrawal, clinical depression and even suicide⁽⁴⁾.

Propionibacterium acne (P. acnes), responsible for the outbreak of inflammatory acne produce and accumulate endogenous porphyrins (namely protoporphyrin, uroporphyrin, and coproporphyrin III) which are the target chromophores for the acne clearance application⁽⁵⁾⁽⁶⁾. Light-based therapy for acne was introduced a decade ago and has become an accepted modality in the armamentarium of acne treatments.

Exposure of inflammatory acne lesions to light utilizing blue, green and red wavelengths which are absorbed by the porphyrins induces a photochemical reaction which generates highly reactive, free radical singlet oxygen that subsequently causes bacterial destruction⁽⁷⁾.

The IPL acne phototherapy technique thus relies on a combination of photochemical and photothermal mechanisms of action. The wide spectral range of wavelengths optimizes the trade-off between penetration depth and porphyrin activation efficiency. Blue light (415-420nm) gives the strongest porphyrin photoactivation but poorly penetrates into human skin, whereas green and red lights, although less effective in photoactivation, have an increased depth of penetration into human skin that contributes to the stimulation of cytokine that is released from macrophages and induces an anti-inflammatory response⁽⁸⁾⁽⁹⁾.

Materials and Methods

Twenty three patients between the ages of 15-29 years, with mild to moderate facial acne, underwent two treatments per week for 4 weeks using the Trios™ acne clearance applicator, which emits wavelengths from 400 to 1200nm. During the treatment 30-55 pulses of 5J/cm² at 25 msec duration were applied, covering the entire treatment area with no more than 30% overlap. After the completion of the above treatment schedule, evaluations were held once a month for three consecutive months. Photographs of the treated areas were taken at baseline, post treatments 2, 4, 6 and 8, and at each of the three monthly evaluation visits. Lesions were counted using these photographs.

At the same time patients were requested to assess treatment results and progress using the scale below:

- 0 - No improvement (< 25%)
- 1 - Mild improvement (25%-50%)
- 2 - Moderate improvement (50%-75%)
- 3 - Significant improvement (>75%)

Results

All patients completed the treatment course and underwent monthly evaluation follow-ups for 3 months following the last treatment. Moreover, all patients reported good response to the treatment.

At the third monthly follow up visit 83% (19/23) of the patients demonstrated significant clearance (>75%) compared with baseline (see Figures 1 and 3). The rest of the patients, 17% (4/23), demonstrated moderate clearance (~66%) and underwent two additional treatments post third follow up visit. At the end of the treatment course and the three follow up visits an average clearance of 88.83% was recorded for all 23 patients (see Figures 1 and 3).

In 78% (18/23) of the patients, improvement was consistent throughout the study period. Interestingly enough, the patients' assessments correlated with the actual acne lesion counts; 87% (20/23) assessed the improvement as significant and 13% (3/23) assessed the improvement as moderate. In all patients, a dramatic improvement in skin texture, tone and complexion was also visible.

With the exception of transient mild erythema, no adverse effects were reported and all patients completed the treatment course and underwent monthly evaluation follow ups for 3 months following the last treatment. Moreover, all patients reported good response to the treatment.

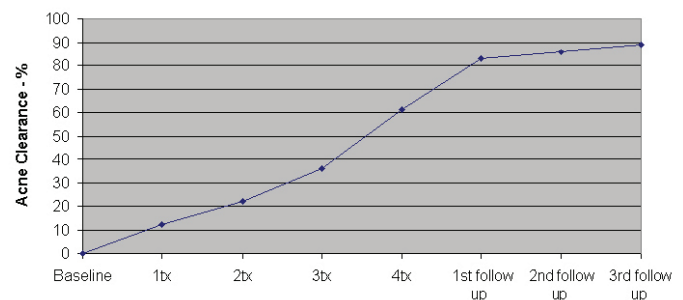


Figure 1 – Percentage of acne clearance



Before



Post 8 treatments

Figure 2 – Before and after of acne clearance treatment

Discussion

The results of this study confirm that treatment of Acne Vulgaris with the Trios™ IPL system is an effective and safe application. At the conclusion of the study an average improvement of 88.83% was recorded. Improvement rate was consistent throughout the study for the majority of patients (78%). In some cases a withdrawal was recorded (only post 4 treatments), however at the conclusion of the study, 4 out of 5 of these patients also showed a significant improvement in their condition. No adverse effects were reported, except for mild and transient erythema. In addition, all patients demonstrated an improvement in skin texture and quality. The results of this study indicate that treatment with the Trios™ IPL system hinders development of acne lesions and that results are sustainable over time.

Patient No.	Sex	Baseline*	Post 2tx		Post 4tx		Post 6tx		Post 8tx		Post third follow-up	
			Count	Average clearance %	Count	Average clearance %	Count	Average clearance %	Count	Average clearance %	Count	Average clearance %
1	M	34	34	0	26	24	21	38	14	59	3	91
2	M	73	51	30	47	36	36	51	27	63	19	74
3	F	22	24	-9	24	-9	23	-5	10	55	2	91
4	F	37	38	-3	30	19	25	32	13	65	1	97
5	F	63	52	17	41	35	37	41	28	56	21	67
6	M	19	20	-5	18	5	16	16	7	63	2	89
7	F	33	30	8	25	24	22	33	11	67	5	85
8	M	31	25	19	22	29	18	42	10	68	1	97
9	F	44	37	16	36	18	29	34	21	52	0	100
10	M	18	16	11	21	-17	18	0	11	39	8	56
11	F	39	35	10	34	13	27	31	13	67	4	90
12	M	58	54	7	50	14	42	28	27	53	3	95
13	F	44	38	14	31	30	26	41	18	59	1	98
14	F	61	50	18	43	30	28	54	27	56	4	93
15	F	21	23	-10	18	14	14	33	8	62	0	100
16	M	55	47	15	36	35	31	44	17	69	5	91
17	F	46	37	20	33	28	25	46	13	72	2	96
18	M	23	22	5	16	30	13	43	5	78	3	87
19	F	45	41	10	35	22	27	40	18	60	14	69
20	M	32	27	16	24	25	21	34	20	38	3	91
21	M	54	40	26	39	28	30	44	23	57	1	98
22	F	71	53	25	51	28	38	46	20	72	5	93
23	F	29	17	41	15	48	13	55	7	76	1	97
				12.21%		22.11%		35.79%		61.05%		88.83%

Figure 3- Lesion counts in 23 patients.

* Data indicated in the table relates to the third follow up visit.

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