

BENEFITS OF USING A HYDROQUINONE/TRETINOIN SKIN CARE SYSTEM IN PATIENTS UNDERGOING INTENSE PULSED LIGHT THERAPY FOR PHOTOREJUVENATION: A PLACEBO-CONTROLLED STUDY

INTRODUCTION

A hydroquinone/tretinoin (HQ/tret) skin care system specifically designed for use in conjunction with non-surgical facial rejuvenation procedures has recently become available.¹ This system is designed to condition the skin pre-procedure, and enhance the quality of the skin post-procedure, in order to improve both clinical outcomes and patient satisfaction. It can be used with a variety of other rejuvenation procedures including intense pulsed light (IPL) therapy, botulinum toxin type A, fillers, lasers, microdermabrasion, and chemical peels.²

The new system uses a 4-step process for improving and restoring overall skin quality and involves applying cleanser, toner, 4% hydroquinone, exfoliant, tretinoin, and sunscreen SPF 35. The first step in the process is skin preparation (using the cleanser and toner), the second step is skin correction (using hydroquinone and the exfoliant), the third step is skin stimulation (using tretinoin), and the fourth step is skin protection (using the sunscreen).

Collectively, the components of the HQ/tret system would be expected to offer improvements in hyperpigmentation, fines lines and wrinkles, skin texture, and acne.^{3,4} IPL therapy also offers improvements in telangiectasias as well as hyperpigmentation, fine lines and wrinkles, and skin texture.⁵⁻⁷ Although both treatment options are effective against some of the same manifestations of photodamage, the mechanisms by which they achieve these benefits are thought to be different. As a result, their combined use may offer greater improvements in photodamage than either treatment alone. In a large-scale experience trial, pre-conditioning with the HQ/tret system alone resulted in good or excellent improvement in overall skin quality in 34% of patients.² After IPL treatment and post-conditioning with the HQ/tret system, this proportion increased to 89%.

We present here the results of a placebo-controlled study quantifying the clinical effects of using the HQ/tret system adjunctively with IPL.

METHODS

Study design

- Observer-masked, randomized, placebo-controlled study

Inclusion criteria

- Moderate to severe facial wrinkling of the skin in the eye and lip area
- 35-65 years of age
- Planning to undergo IPL treatment
- Fitzpatrick skin type I-IV

Exclusion criteria

- Use of non-study tretinoin product in preceding 3 months or during study
- Use of systemic steroid in preceding 6 months or during study
- Use of systemic retinoid in preceding 2 years
- Any facial skin condition that might interfere with study diagnosis or evaluation
- Recent excessive exposure to ultraviolet light

Washout periods

- 7 days for topical products containing alpha hydroxy acids, retinoic acid, retinol, salicylic acid, or vitamins C or D (or derivatives of)

- 30 days for investigational drugs and for facial microdermabrasion treatment

- 3 months for non-ablative laser, light, and radiofrequency treatment

- 6 months for facial dermabrasion, ablative laser treatment, and the injection of botulinum toxin type A or dermal fillers

Treatment regimen

- Patients were randomly assigned to use one of the following, each day for 90 days:
 - 4% hydroquinone/0.05% tretinoin skin care system (cleanser, toner, hydroquinone, exfoliant, and sunscreen applied in the morning, and cleanser, toner, hydroquinone, and tretinoin applied in the evening)
 - Placebo regimen (cleanser, moisturizer, and sunscreen applied in the morning, and cleanser and moisturizer applied in the evening).
- In addition, all patients received IPL therapy on days 30 and 60.
- Patients were instructed to avoid using any non-study lotions, creams, or medicated powders or solutions on their face during the study.

Outcome measures (see Table 1)

- Evaluations were performed at baseline and at days 30, 60, and 90.

- Physician ratings:
 - Overall improvement in facial skin
 - Hyperpigmentation, laxity, telangiectasia, fine lines/wrinkles, tactile roughness, erythema, and peeling
- Overall improvement in facial skin
- Hyperpigmentation, laxity, telangiectasia, fine lines/wrinkles, tactile roughness, erythema, peeling, burning, and dryness.

TABLE 1 Scales used for outcome measures.

Physician Ratings			Patient Ratings			
Improvement in facial skin	Hyperpigmentation, laxity, telangiectasia, tactile roughness, fine lines/wrinkles, erythema, and peeling	Burning and dryness	Overall improvement in facial appearance	Facial skin texture	Satisfaction with facial appearance	Satisfaction with treatment regimen
100% (Complete)	None - normal	None - normal, no discomfort	100% (Complete)	Much smoother	Very satisfied	Very satisfied
~75% (Very noticeable)	Trace - barely visible and localized	Trace - an awareness, but no discomfort and no intervention required	~75% (Very noticeable)	Smoother	Satisfied	Satisfied
~50% (Noticeable)	Somewhat visible and diffuse	Mild - a noticeable discomfort that causes intermittent awareness	~50% (Noticeable)	Same	Dissatisfied	Dissatisfied
~25% (Slightly noticeable)	Visible and diffuse	Moderate - a noticeable discomfort that causes continuous awareness	~25% (Slightly noticeable)	Rougher	Very dissatisfied	Very dissatisfied
No change	Extremely visible and dense	Severe - a definite continuous discomfort that interferes with normal daily activities	No change	Much rougher	—	—
Worse	—	—	Worse	—	—	—

- Patient ratings:
 - Overall improvement in facial appearance
 - Facial skin texture
 - Satisfaction with facial appearance
 - Satisfaction with treatment regimen.

Statistical analyses

- Data were analyzed on an intent-to-treat basis (i.e. including all randomized subjects with at least one follow-up visit).
- All tests were two-sided and interpreted at a 5% significance level.

RESULTS

Patients

- Of 36 patients enrolled, 35 (97%) completed.
- The majority of patients were:
 - Female (94%)
 - Caucasian (89%)
 - Fitzpatrick skin type III (64%).

Efficacy

- Physician ratings of overall improvement in facial skin were significantly superior with the HQ/tret system + IPL compared with placebo + IPL at days 30, 60, and 90 ($P \leq .05$). At day 90, $\geq 75\%$ overall improvement (Figure 1) was reported in:
 - 72% of patients receiving the HQ/tret system + IPL
 - 19% of patients receiving placebo + IPL.
- Levels of hyperpigmentation were significantly lower with the HQ/tret system + IPL than with placebo + IPL at days 30, 60, and 90 ($P \leq .05$) (Figure 2). At day 90, mean scores had declined from a baseline of:
 - 2.2 to 1.6 with the HQ/tret system + IPL
 - 2.2 to 2.1 with placebo + IPL.
- The degree of laxity was also significantly lower with the HQ/tret system + IPL than with placebo + IPL at day 90 ($P \leq .05$) (Figure 3). At day 90, mean scores had declined from a baseline of:
 - 2.2 to 1.6 with the HQ/tret system + IPL
 - 2.2 to 2.1 with placebo + IPL.

- Levels of telangiectasia appeared to be lower with the HQ/tret system + IPL than with placebo + IPL at day 90 ($P = .051$) (Figure 4). At day 90, mean scores had declined from:
 - 1.9 to 1.4 with the HQ/tret system + IPL
 - 2.0 to 1.9 with placebo + IPL.

- Improvements in tactile roughness and fine lines/wrinkles were comparable in both groups.

- At day 90, mean scores for tactile roughness were reduced from a baseline of:
 - 2.2 to 1.0 with the HQ/tret system + IPL
 - 2.3 to 1.0 with placebo + IPL.

- At day 90, mean scores for fine lines/wrinkles (Figure 5) were reduced from a baseline of:
 - 2.6 to 1.9 with the HQ/tret system + IPL
 - 2.6 to 2.1 with placebo + IPL.
- Photographic documentation of the clinical improvement achieved with the HQ/tret system + IPL is shown in Figure 6.

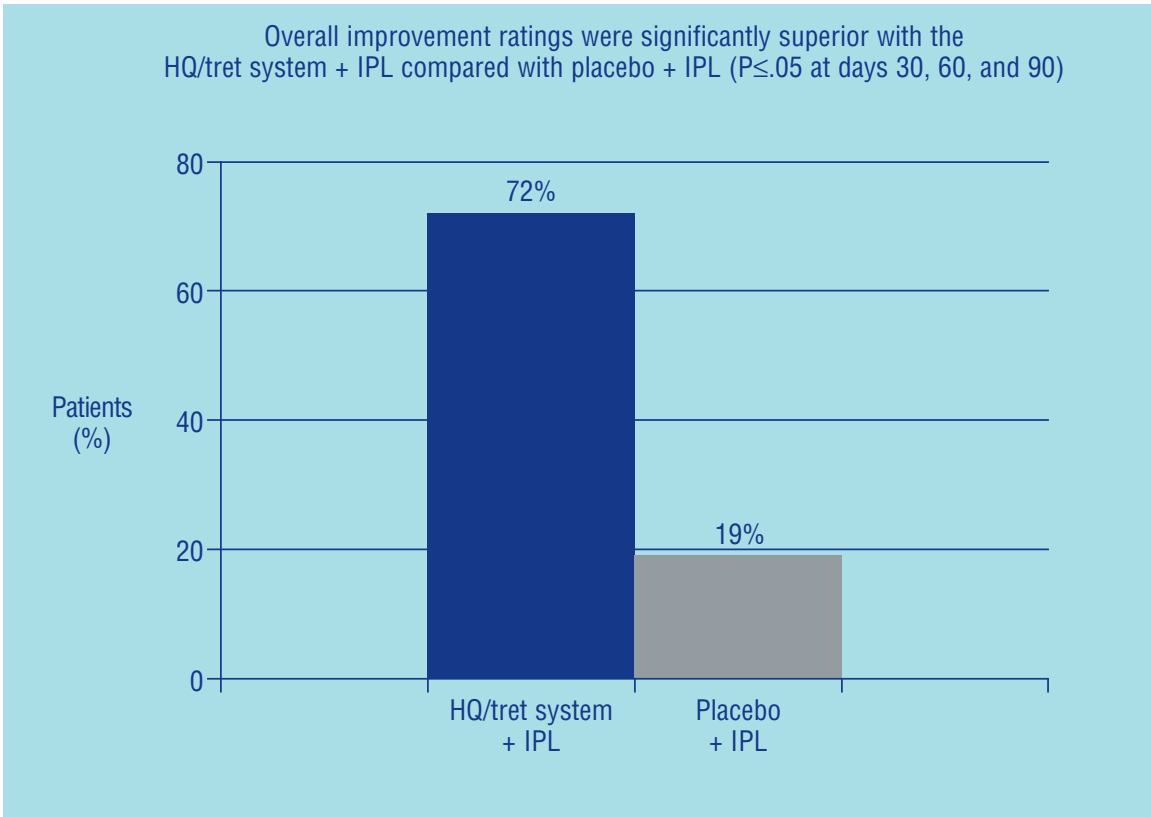


Figure 1. Patients with at least 75% overall improvement in facial skin at day 90.

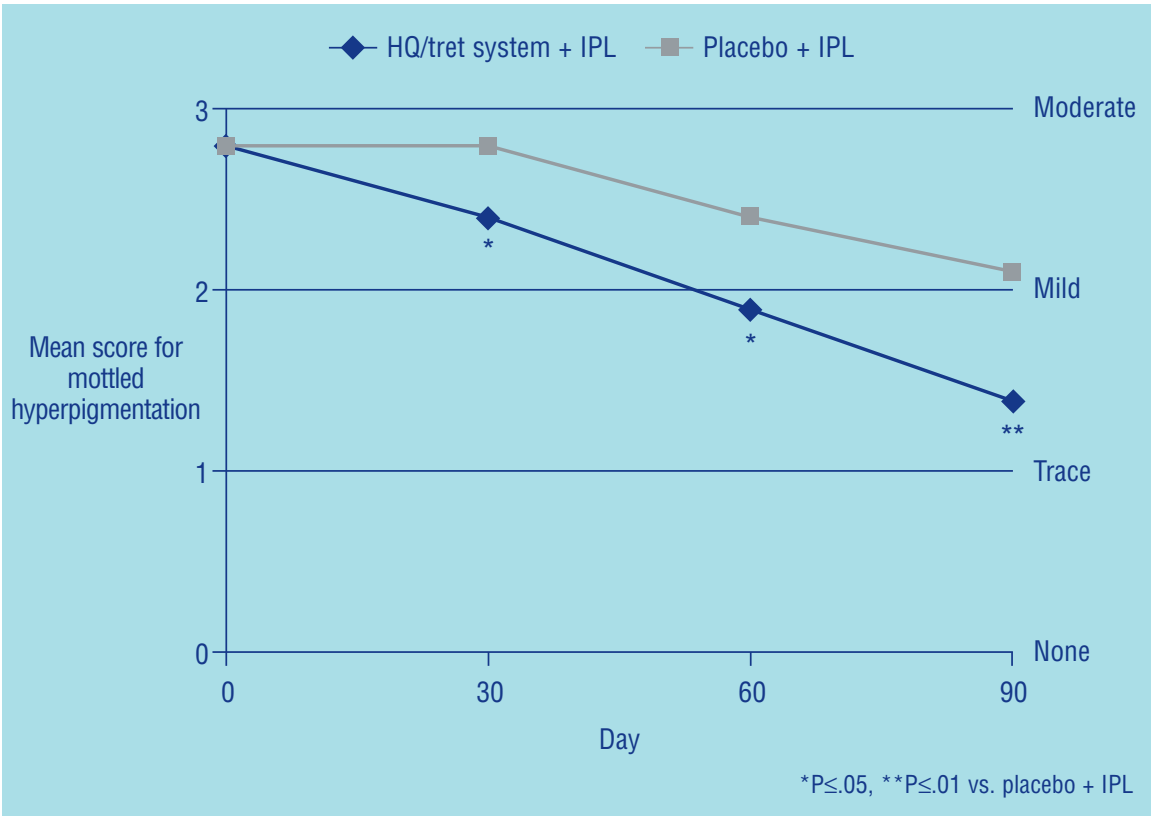


Figure 2. Mean scores for mottled hyperpigmentation.

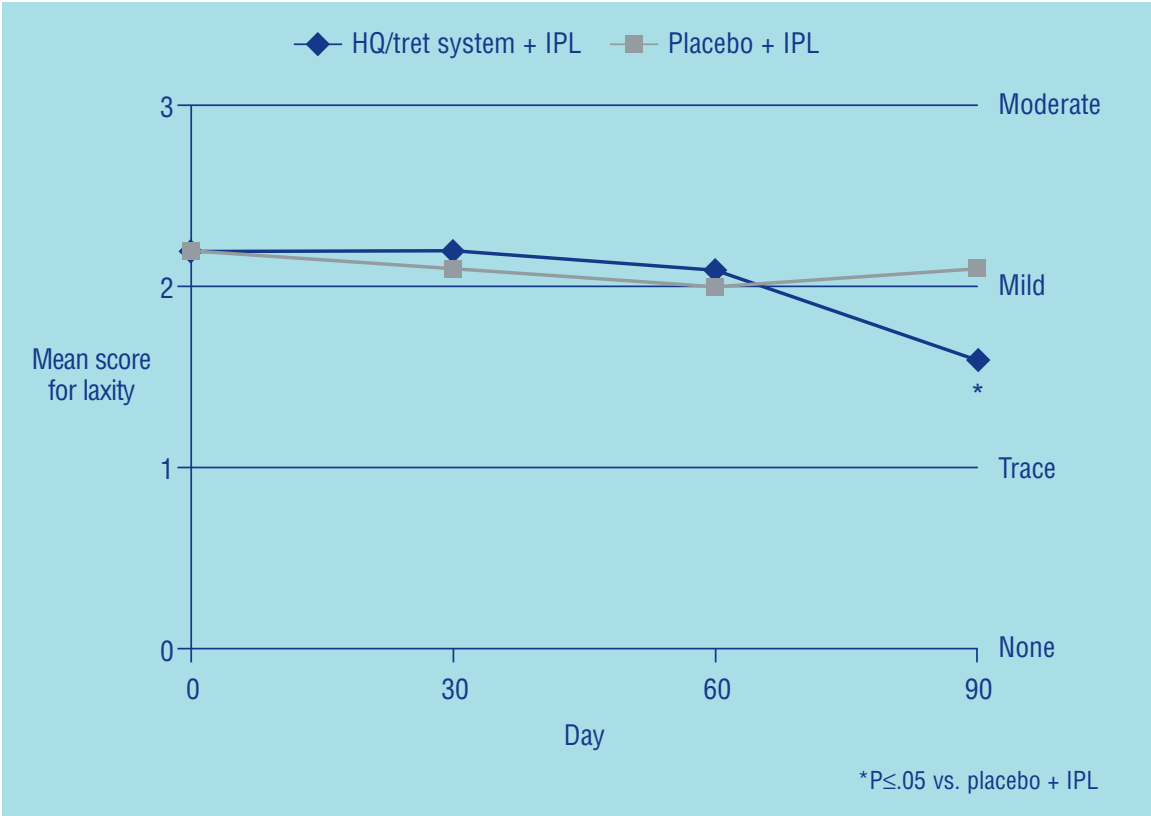


Figure 3. Mean scores for laxity.

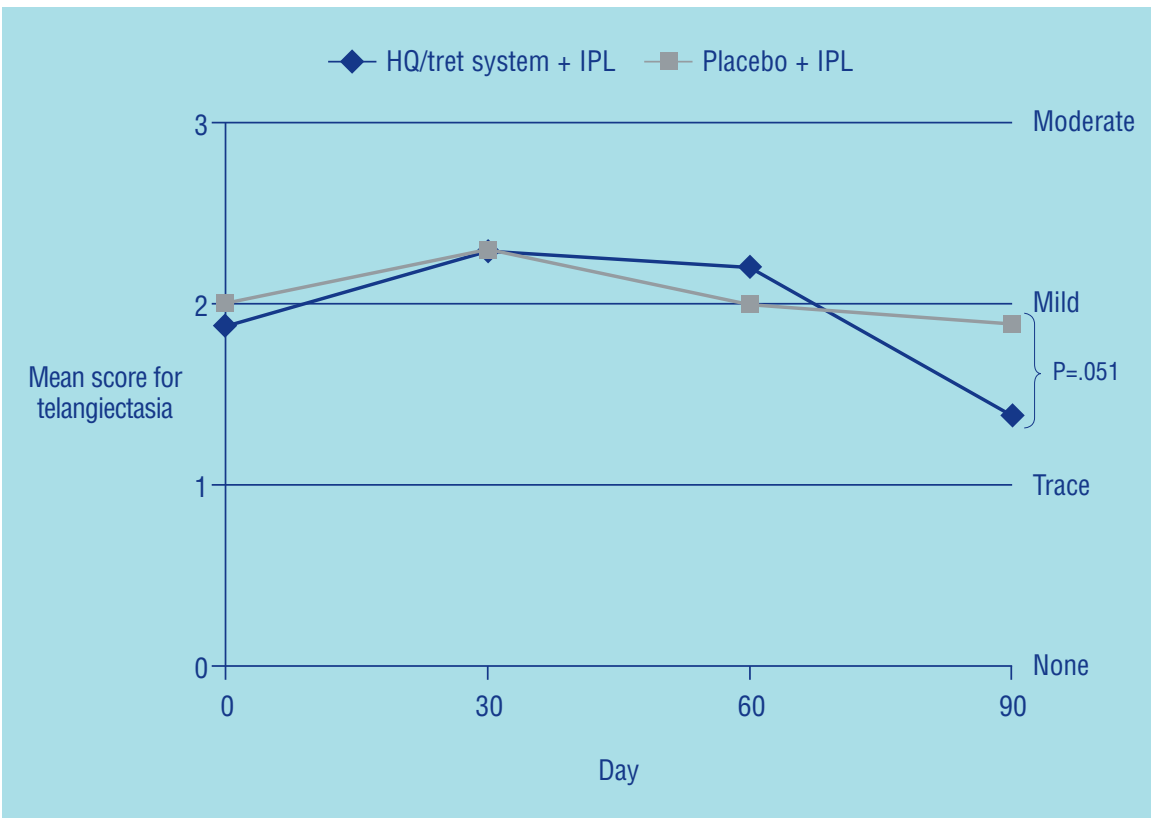


Figure 4. Mean scores for telangiectasia.

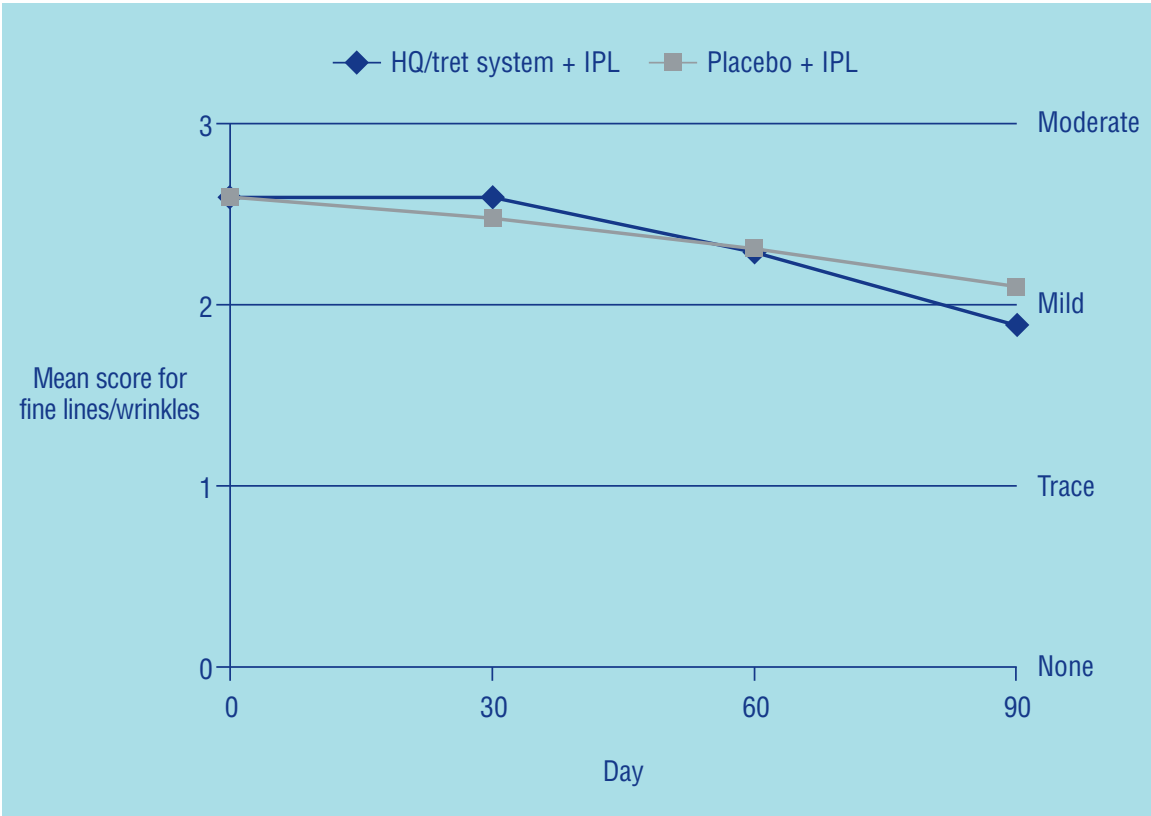


Figure 5. Mean scores for fine lines/wrinkles.

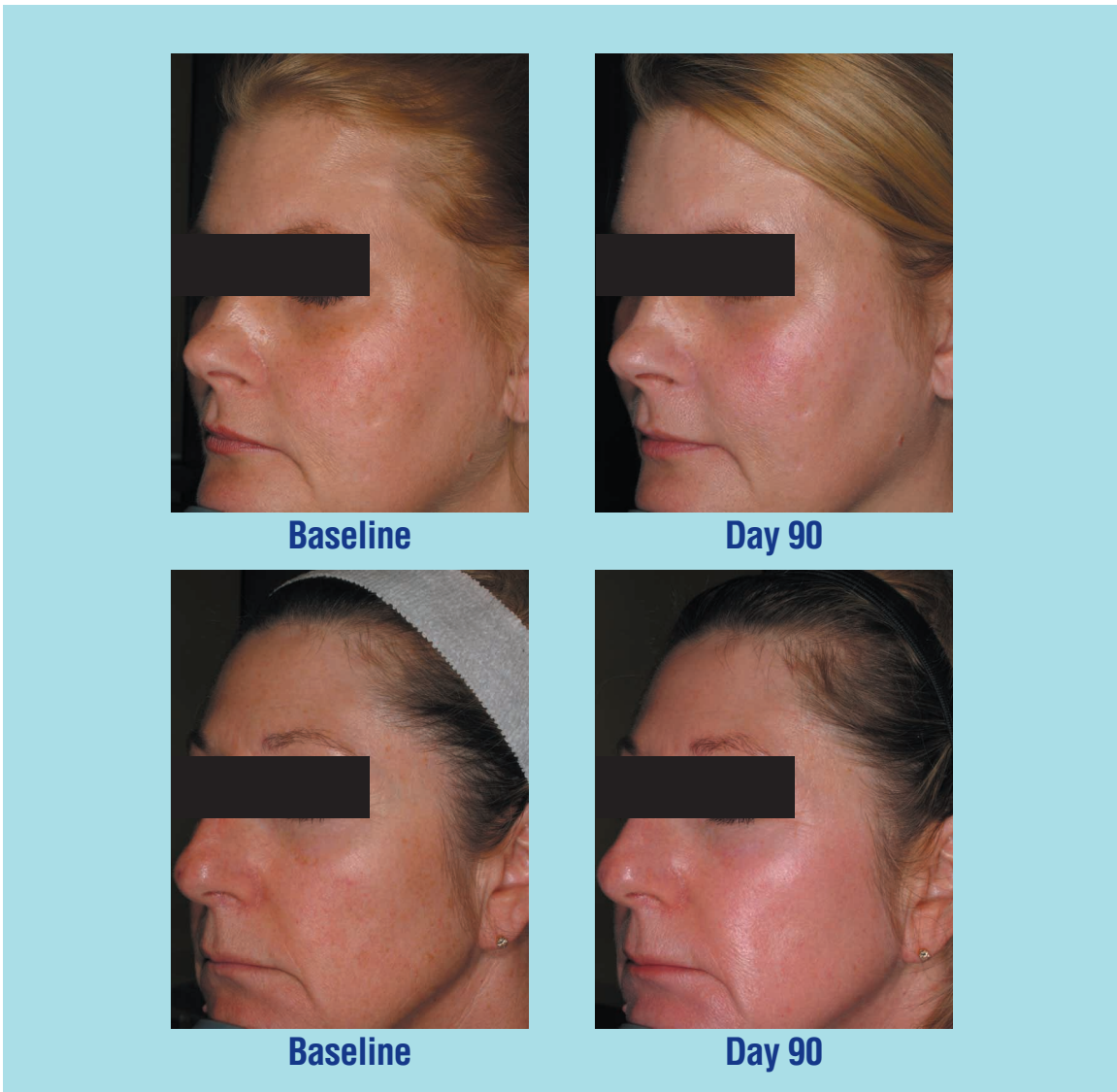


Figure 6. Clinical improvement achieved as a result of using the HQ/tret system in conjunction with IPL treatment.

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Patient satisfaction

- Patient ratings were significantly more favorable in the HQ/tret system + IPL group than the placebo + IPL group ($P \leq .05$ at days 30, 60, and 90 for all four patient ratings below). At day 90:
 - 72% versus 19% considered they had achieved an improvement of at least 75% in their facial appearance
 - 89% versus 50% thought their skin was smoother or much smoother than at baseline
 - 83% versus 56% were satisfied or very satisfied with their facial appearance (Figure 7)
 - 94% versus 56% were satisfied or very satisfied with their treatment regimen.

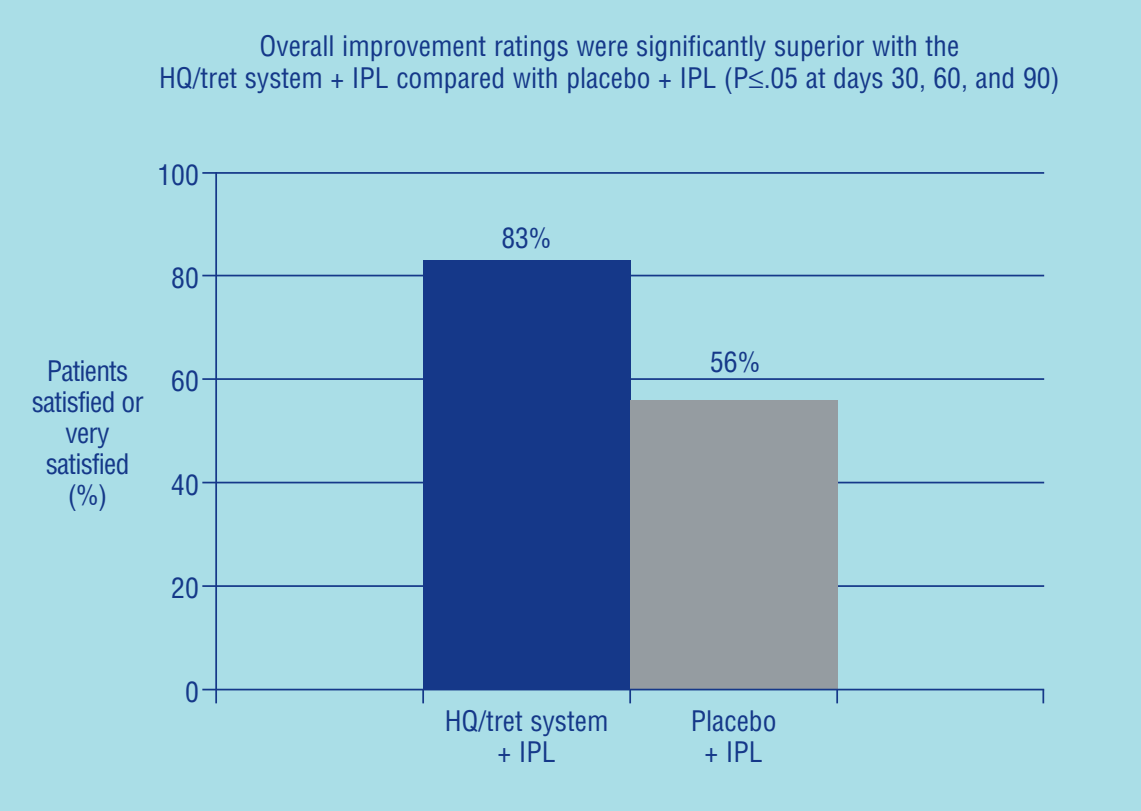


Figure 7. Patients satisfied or very satisfied with facial appearance at day 90.

Tolerability

- There were no significant between-group differences in erythema.
- Burning and peeling were transiently significantly greater with the HQ/tret system + IPL than with placebo + IPL at day 30 (resolving gradually thereafter). However, mean levels were less than trace for burning, and less than mild for peeling, throughout the study.
- Dryness increased transiently at day 30 with the HQ/tret system + IPL and thereafter declined to below baseline levels. In the placebo + IPL group, dryness declined to below baseline levels from day 30 onward. In both groups, mean levels were less than mild throughout the study.

CONCLUSIONS

Adjunctive use of the HQ/tret system enhances the overall improvements in facial skin achieved with IPL therapy alone—resulting in significantly lower levels of hyperpigmentation and laxity, and significantly greater levels of overall improvement and patient satisfaction. Use of the HQ/tret system in combination with IPL treatment was generally well tolerated with mean levels of dryness, peeling, and burning remaining less than mild throughout the study.

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DISCLOSURES

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