High-Fluence Treatments with a 2,790 nm YSGG Laser

According to the author, the addition of Pearl (2,790 nm) to his practice fills a critical void for patients seeking pigmentary and mild rhytid improvement with minimal social downtime. Furthermore, Dr. DiBernardo's experience is fully compatible with the increased demand for minimized recovery times, and a more immediate clinical response.

Ablative procedures will not meet the "immediate response, minimal downtime" criteria for today's patient on the move. Further, both non-ablative and fractional treatments require as many as 5 or even more procedures. With Pearl, the improvement in pigment and rhytids is seen with little more than a long weekend recovery period.

Background and Objectives

By primarily targeting water, the 2,790 nm Pearl wavelength provides surface ablation while simultaneously coagulating the lower epidermis and heating the upper dermis. This unique balance between water vaporization and residual heating produces both collagen remodeling and a layer of 'natural biological dressing' to aid in healing. This minimally invasive procedure improves wrinkles, skin texture, age spots and sun damage with 3 to 5 days of social downtime. A previous study by E.V. Ross, M.D. using less aggressive settings (avg. 2.2 J/cm^2 fluence) demonstrated the fore stated claims for skin types I through III. The purpose of this study was to evaluate the safety and efficacy of high-fluence Pearl laser treatments for skin types I through IV.

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Study Design/Material and Methods

This was an institutional review-board-approved study of 9 subjects with Fitzpatrick skin types I-IV and mild to moderate photo damage. Two treatments were performed at 4 week intervals, with follow-up visits at 3, 7 and 28 days following each treatment.

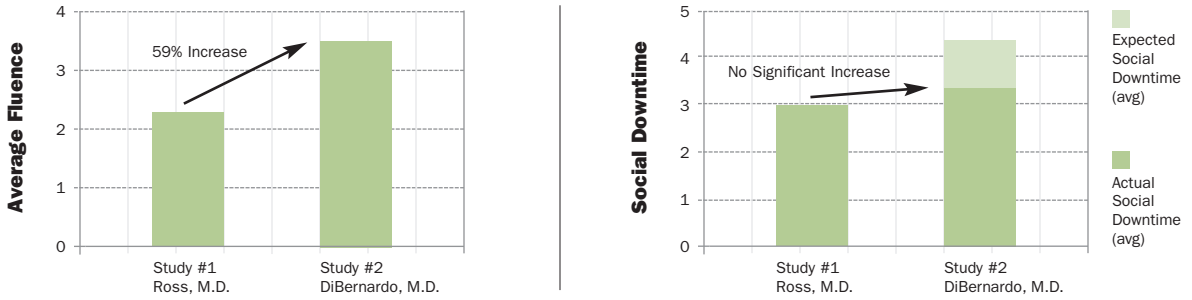
A YSGG laser system (Pearl; Cutera, Brisbane, CA) was used with a 3.5 J/cm^2 fluence and 20% overlap settings. Outcomes were analyzed using patient questionnaires, blinded comparison of standardized pre- and post-treatment photographs, and images enhanced with red-brown image filtering, including comparative quantitative analyses. Prior to treatment, all subjects were treated with LMX 5% topical lidocaine anesthetic cream for 35 to 50 minutes. To remove residual topical cream and reduce surface hydration, each subject's face was wiped clean with pure acetone.

Results

Compared to a previous study by E.V. Ross, M.D. (average of 3.0 days social downtime*), there was no significant change in patient safety or downtime resulting from high-fluence treatments (average of 3.3 days social downtime*). Furthermore, enhanced photographic analysis reveals improvements in wrinkles of up to 70% after

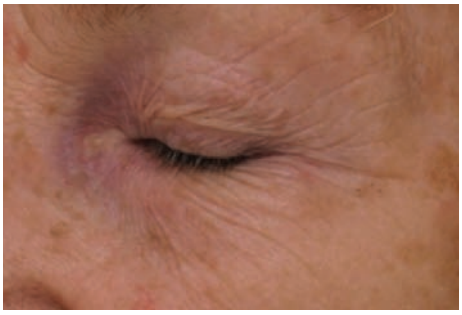
treatment. Significant additional improvements were seen after the second treatment. There were no reported side effects or increases in wound care associated with these more aggressive treatments.

No significant increase in social downtime resulting from 59% increase in fluence



PATIENT A

79-year-old female, skin type II, 3.5 J/cm^2, 0.5ms, 20% overlap.



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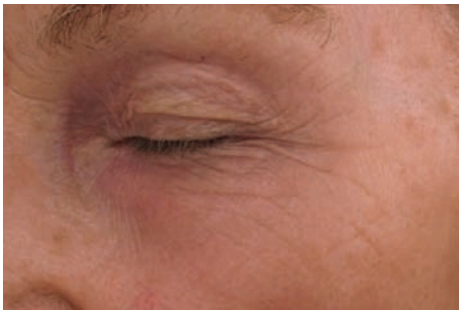


28 DAYS POST 2 TREATMENTS

Patient A – Self Rating	No Improvement	Mild Improvement	Significant Improvement	Dramatic Improvement
Brown Spots				●
Tone & Texture				●
Skin Tightness		●		

PATIENT B

34-year-old female, skin type IV, 3.5 J/cm^2, 0.3ms, 20% overlap.

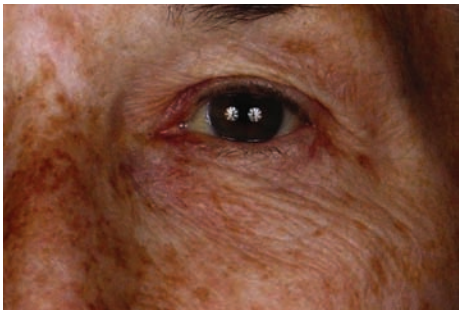
BEFORE

28 DAYS POST 2 TREATMENTS

Patient B – Self Rating	No Improvement	Mild Improvement	Significant Improvement	Dramatic Improvement
Brown Spots				●
Tone & Texture			●	
Skin Tightness				●

PATIENT C

76-year-old female, skin type IV, 3.5 J/cm^2, 0.3ms, 20% overlap.



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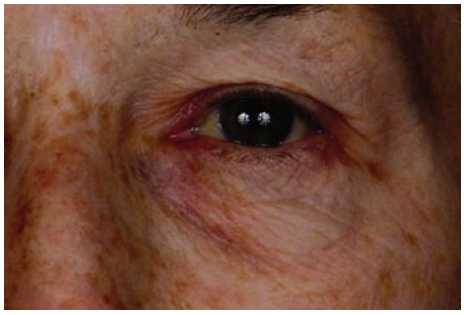
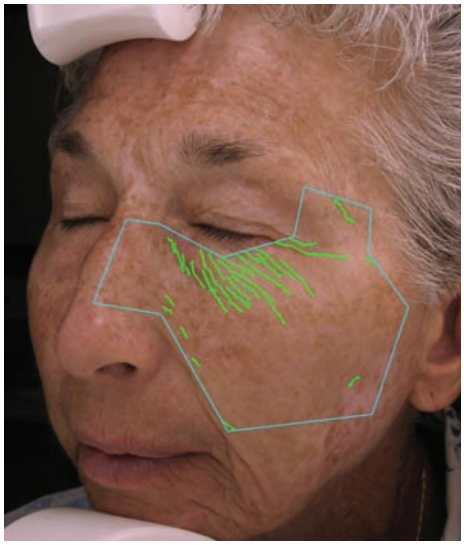


28 DAYS POST 1 TREATMENT

BEFORE

28 DAYS POST 2 TREATMENTS



BEFORE

AFTER 2 TREATMENTS. QUANTITATIVE MEASUREMENT SHOWS 70% REDUCTION IN RHYTIDS

➤ *Advanced Photographic Imaging and Analysis Provided by Visia (Canfield Imaging Systems, Fairfield, NJ)*

Patient C – Self Rating	No Improvement	Mild Improvement	Significant Improvement	Dramatic Improvement
Brown Spots			●	
Tone & Texture				●
Skin Tightness				●

Discussion

Dramatic patient benefits were seen after one treatment. A combination of wrinkle reduction, pigmentary improvements and smoother texture were obvious. Additional significant benefits were also seen after the second treatment.

This study helps demonstrate that high-fluence Pearl treatments can be safe and effective for skin types I through IV. However, the success of this study does not mean that high-fluence settings are appropriate for all skin type IV patients (there were only 2 subjects with type IV skin in this study). The shorter (0.3 ms) settings for the skin type IV patients may have contributed to the safety profile, although it is difficult to draw conclusions in the absence of negative side effects.

The addition of Pearl to the practice laser armamentarium fills a void. Over the past few years, the non-ablative arena has excelled. There is a group of patients, however, that cannot invest the time of 5 or more treatments. Until now, ablative procedures came at the price of significant clinical downtime. Now, Pearl can offer impressive results with little more than a long weekend of recovery. ■

** Social Downtime, for this study, means patients must avoid sun exposure, but may continue their normal daily activities. They may not wish to attend important social events.*

References

- Ross E, Naseef G, Skrobal M, Gravelink J, Anderson R. Comparison of collagen shrinkage and wound healing for the CO_2 laser, erbium laser and dermabrasion. Paper presented at: Summer Meeting of the American Academy of Dermatology; July 26, 1996; Orlando, FL.
- Alster TS, Lupton JR. Erbium:YAG cutaneous laser resurfacing. Dermatol Clin. 2001 Jul; 19(3):453-66