

# TREATMENT OF PHOTOREJUVENATION AND NECK LAXITY USING SEQUENTIAL EMISSIONS OF WAVELENGTHS-A CLINICAL AND HISTOLOGICAL STUDY

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## Background and Objectives

Fractional devices have been used in treating wrinkles, skin tone and texture by largely targeting the superficial dermis. The purpose of this study is to evaluate a new laser allowing sequential emission of wavelengths 1320nm Nd:YAG followed by 1440nm Nd:YAG employing a diffractive array to simultaneously treat wrinkles, skin tone, and texture as well as laxity of the neck. Last year we reported that 1440nm alone with this diffractive array showed fractional thermal damage to 200-300microns with a robust inflammatory response to 1000 microns. We felt that this new sequential emission of 1320nm followed by 1440nm should provide a deeper injury and inflammatory response that might be ideally suited to the treatment of photodamage of the neck. We also wanted to determine the histological nature of the response at 3 months after a series of 3 monthly treatments.



## Study Design and Methods

10 patients with photoaging consisting of mild to moderate wrinkle and skin laxity on the face or the neck, underwent a series of 3-5 treatments at 2-4 week intervals using the Affirm laser (Cynosure, Inc.) which allows

sequential emission of wavelengths (1320nm targeting the deeper dermis followed by 1440nm Nd:YAG targeting the region of solar elastosis ~300 microns) and equipped with T-350 CAP array. Fluences of 8-10J/cm<sup>2</sup> of 1320nm, followed by 2J/cm<sup>2</sup> of 1440nm, 14-mm spot, with 1-2 passes were employed. Histologies of 7 patients were taken at 24 hours and 3 months post 3 monthly treatments on buttocks skin. Histology shows fractional coagulative dermal damage and fibrosis at 3 months post final treatment. Patients were evaluated photographically throughout treatment and at 3 months post final treatment.

	Reduction Average Score	Texture Average Change	Overall Appearance Average Score
SM	2.7	2.9	2.7
VL	2.6	2.3	2.5
MA	2.6	2.8	2.5
JW	2.4	2.8	2.7
AB	2.5	2.2	2.6
TP	3.2	2.7	3.1
KG	2.9	2.8	2.7
VR	2.3	2.3	2.2
JM	2.0	1.9	1.8
KH	2.4	2.1	2.4

## Results and Conclusions

Photographic evaluation was done by a group of six blinded graders looking specifically at rhytid reduction textural change and overall appearance. Patients were graded on a scale of 1-4 (1=mild, 2=moderate, 3=good, 4=excellent). At 3 months there was reproducible mild & diffuse dermal fibrosis extending down

to 450 micron. This was deeper than the fibrotic response seen with 1440 alone which was approximately 250 microns in dermal depth. **Side Effects:** Using the study design parameters erythema lasting less than 48 hours was a constant finding. No blistering or crusting was noted in our patients. There was pain associated with the treatment. Air cooling helped relieve the discomfort associated with this treatment and is absolutely essential to prevent unwanted overheating. In our early pilot studies inadequate cooling did result in some blistering and crusting which later led to some fine textural changes and small scars. The sequential mission of 1320nm and 1440nm Nd:YAG laser with T-350 CAP array provides safe and effective treatment of wrinkles, skin tone texture, and skin laxity. Photodamage of the neck has been a difficult problem to treat with the current tools available in our device armamentarium. Ablative devices can result in unpredictable and sometimes catastrophic results. We believe that this multiplexed treatment resulted in a better improvement than 1440nm alone due to the increase depth of diffuse heating and inflammation with the 1320nm wavelength. We will report a comparative study evaluating 1440 alone with multiplexed 1320 and 1440 with the CAP technology.

Increased new collagen to 450microns

