USE OF A MICRO-FRACTIONAL 2940 nm LASER IN THE TREATMENT OF WRINKLES AND DYSPIGMENTATION

E. Victor Ross, Michael Swann, and David Barnette. Scripps Clinic, San Diego, CA,

Goal: To determine clinical outcomes and microscopic wound patterns over a range of parameters with a micro-fractional ER:YAG laser.

Methods: A 2940 nm micro-fractional laser with a 6-10 mm spot, and 400 - 920 microbeam/cm^2 was applied in 7 patients (skin types I-III). Test spots in the preauricular area and biopsies were performed just after treatment. Treatments were performed with 1-3 passes over less damaged areas and 3-8 passes over more severely photodamaged regions peri-oral and peri-orbital at various energy and pulse widths. Additionally, small areas were treated with a standard Er:YAG laser at 4 passes and 5 J/cm^2 to compare wound healing and clinical endpoints. Follow up visits were scheduled up to three months. One to three treatment sessions were carried out at 3-6 week intervals. Clinical outcomes included wrinkle improvement and clearance of pigment as graded by blinded observers via photographs.

Results: Immediately after treatment bronzed skin was observed, occasionally with focal pinpoint hemorrhage. By 2 weeks, only mild erythema remained. Wrinkle improvement in the perioral and periorbital areas was approximately 50% after one treatment. Microscopic exam showed confluent ablation/epidermal damage ranging from 0-80 microns/20-100 microns. Within this band of damage, separated columns of ablation were observed typically with a depth of 200 microns with 20-30 microns of residual thermal damage at the periphery of these conical microwounds. Traditional macrowound erbium YAG laser showed similar wound healing times but preliminary evidence suggest that wrinkle responses are inferior to fractional wounds with equivalent healing times.

Conclusion: A fractional 2940 nm system can achieve > 50% reduction from baseline (grades 5-9) Fitzpatrick perioral wrinkles after one treatment and 4-5 days of re-epithelialization.