



HAIR DISORDERS

FRACTIONAL PHOTOTHERMOLYSIS STIMULATING HAIR FOLLICLE REGROWTH IN ALOPECIA PATIENTS: A PILOT STUDY

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Introduction: By creating areas of microthermal injury, fractional photothermolysis induces wound healing and subsequently stimulates dermal papillae, accelerates telogen to anagen change, and transforms vellus to terminal hairs. The use of fractional photothermolysis for hair regrowth is controversial with varying demonstrations of efficacy. Current literature reports using non-ablative and ablative wavelengths with 20% to 60% increase in hair density after 5 to 24 treatment sessions spaced one to six weeks apart.

Objectives: To determine if non-ablative, fractional photothermolysis stimulates scalp hair growth in patients with varying alopecia diagnoses, and to demonstrate that optical coherence tomography (OCT) is a novel, non-invasive imaging system that may be used to clinically monitor hair regrowth after fractional photothermolysis in the outpatient setting.

Materials and Methods: Five patients with non-scarring and scarring alopecias received six sessions of non-ablative fractional photothermolysis (1550 nm erbium glass) over three months. After laser treatment was complete, patients were followed for two months. Hair regrowth was measured quantitatively using OCT and qualitatively using serial photography, dermoscopy, as well as physician and patient-reported scales.

Results: Patients demonstrate significant increases in hair density during treatment as measured by OCT. On a 5-point quantitative scale from “worse” to “very much improved”, physicians and patients report hair growth is “improved” to “very improved”. Adjuvant therapy with topical finasteride clinically causes transformation from vellus to terminal hair. After laser therapy is discontinued, patients experience a decrease in hair density.

Conclusions: Fractional photothermolysis utilizing non-ablative wavelengths and low-energy, high-density treatment protocols can stimulate scalp hair follicle regrowth in non-scarring and scarring alopecias. Further studies need to be completed to optimize treatment spacing and total length of laser treatment.

