



## Allergic Contact Dermatitis Treated with LADD (Laser Assisted Drug Delivery) Protocol

Carlos Bravo MD

### Introduction:

Contact dermatitis is an inflammatory state of the skin caused by direct contact with several chemical substances, many of which can be allergens and others that are haptens (incomplete antigens), which must combine with the skin's proteins to produce an antigenic effect.

We present two cases performed with fractional Er:YAG laser to treat the palm of the hands affected by contact dermatitis, which had proven resistant to conventional treatment. The laser application was used in an assisted drug delivery format that enhances the penetration of steroids, since the severe dermatitis plus the hyperkeratosis and lichenification of the skin were impeding the adequate penetration of medication. The laser can also produce a modulating effect in the inflammatory response by reducing it.

Laser channels created by photothermolysis are used as a direct entry port for the drug, which in this case was a steroid (Triamcilonone 40 mg/ml in sterile solution), which improved its absorption and effect. This was enhanced by covering the area for 6 hours with a thin plastic film to avoid product evaporation and forcing its penetration into the skin.

Laser	Fotona SP Spectro
Wavelength	2940 nm – Er:YAG
Handpiece	FS01 – Fractional 9 x 9 pixel matrix – 250 μ per pixel
Fluence	50 J/cm <sup>2</sup>
Pulse mode	Turbo 6
Pulse length	LP – 600 μs
Frequency	1 Hz
Passes	1 pass on active & hyperkeratotic lesions in both hands
Sessions	5 sessions, 2 weeks apart



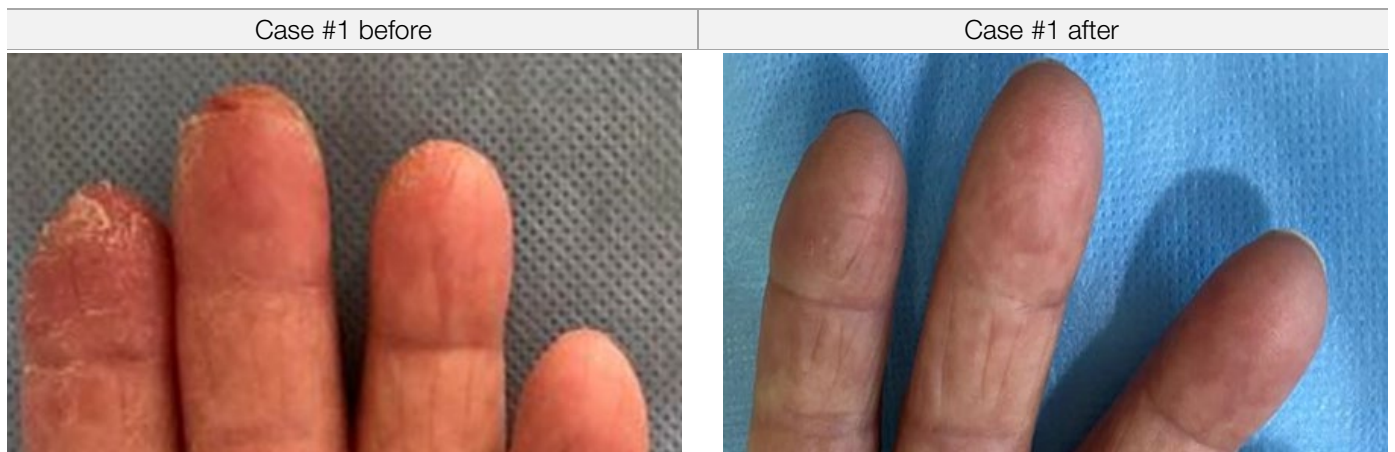
*Dr Carlos Bravo is a Costa Rican dermatologist focused on clinical, surgical and aesthetic dermatology. He is passionate for laser applications and routinely uses both long-pulse and Q-switched Fotona laser platforms in his daily practice as Medical Director of the Dermatología Integral de Costa Rica clinic. He has held positions as professor in Dermatology for several universities and is a former president of the Costa Rican Dermatology Society.*

## CLINICAL CASE:

Case #1: A male 78-year-old patient, a farmer, was diagnosed with irritant & allergic contact dermatitis in the hands, confirmed by patch test and skin biopsy. The patch test was positive for dichromate potassium, cobalt, and fragrances. Although trying to avoid contact with these substances and having been treated with topical clobetasol and emollient creams, the clinical symptoms persisted with erythema, peeling and fissures in both palms, predominantly in the distal region. Based on this, it was decided to apply fractional Er:YAG as a laser-assisted drug delivery system to optimize the steroid penetration and modulate the inflammatory response.

Case #2: A 44-year-old female patient, a housewife, was diagnosed with contact dermatitis in the hands by skin biopsy and patch test that resulted positive to mercapto mix and phenoxyethanol. Although topical clobetasol, avoidance with rubber and the preservative were prescribed, the patient persisted with erythema, peeling and fissured skin in both palms, especially in the distal area. Er:YAG treatment was also performed as described in the previous case.

Results: Post-treatment, both patients have had no recurrence of their dermatitis at 6 and 3 months respectively. They still try to avoid contact with substances that provoke the allergy.



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