

Urea occlusion prior to single session fractional CO₂ laser as a treatment in onychomycosis

Problem

Although lasers have been demonstrated to be useful in onychomycosis, management of onychomycosis still relies on oral antifungals and topical lacquer with slow clearance and poor cure rates. Contraindications to oral agents, prolonged treatment and their failure often lead to

patient dissatisfaction. Fractional CO₂ laser has been used in combination with topical antifungals for three to four sessions administered 4 weeks apart with a reported clearance of onychomycosis.¹ A modification reducing the repeated patient visits, consequent costs and better compliance is thus preferable.



Figure 1a: Diseased nail



Figure 1b: Tegaderm™ dressing

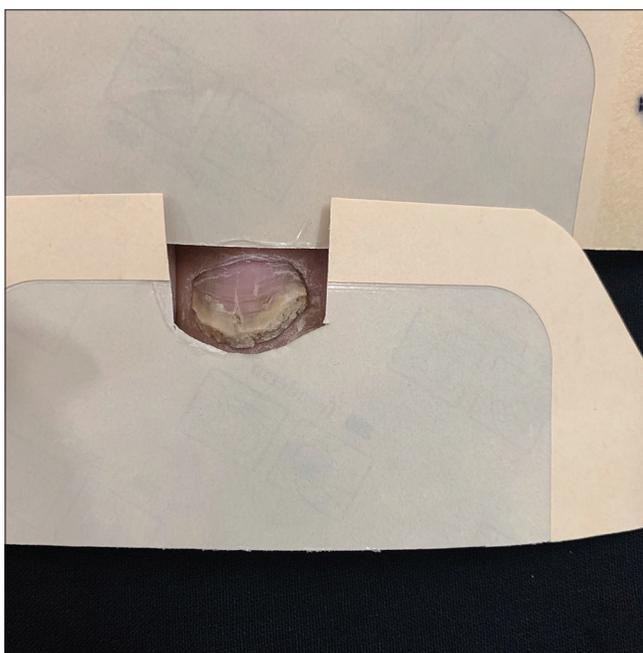


Figure 1c: Measured cutout over the nail



Figure 1d: Nail occluded with urea



Figure 2: Pretreatment toenail with distolateral pattern of onychomycosis



Figure 3: Onychomycosis nail treated with fractional CO₂ laser

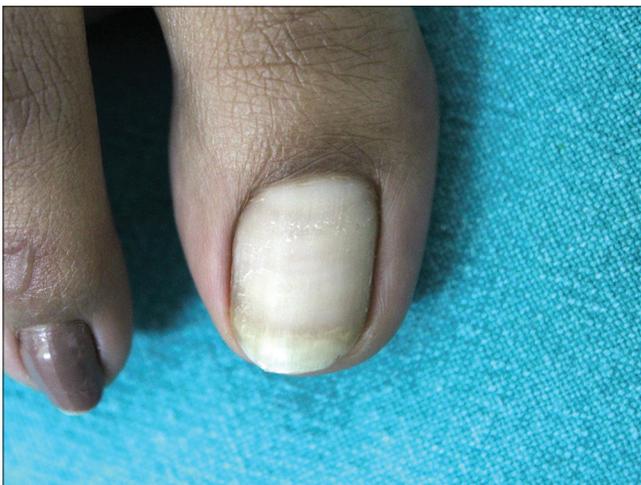


Figure 4: Nail with onychomycosis 6 months posttreatment

Solution

Fractional CO₂ laser utilizes water as its chromophore. In addition, urea, a hygroscopic agent, softens the nail plate and its occlusion helps provide water chromophore at depth, thus enabling the accelerated fungicidal effect of a fractional CO₂ laser.²

The authors have been administering fractional CO₂ laser treatment as a single session following 12% urea occlusion of the affected nail for 24 h with excellent results. The affected nail [Figure 1a] is cleansed with saline, isolated from surrounding skin by applying a cutout of Tegaderm™ film [Figure 1b and c] prepared according to the size, followed by application of preformulated 12% urea, and thereafter, occluded with a second layer of Tegaderm™ [Figure 1d] and dressed in micropore. Next day the occlusion is removed, nail cleansed with saline and a single session of three passes of fractional CO₂ laser (Cis F1-Fractional CO₂ Laser, Sellas, Korea) using pulse energy of 110 mJ, (256 spots/cm², pulse interval of 0.5 mm, pulse duration of 0.1 ms) is administered over the diseased nail including 1mm normal appearing nail surrounding it [Figures 2 and 3]. 1% topical terbinafine cream is advised to be applied twice daily for 3 months. Cases were reviewed once every month. Analysis of Onychomycosis Severity Index score before and 6 months after session showed significant clearance at 6 months [Figure 4].

This modality of single session fractional CO₂ laser offers an alternative management for onychomycosis.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patients have given their consent for their images and other clinical information to be reported in the journal. The patient understands that name and initials will not be published and due efforts will be made to conceal the identity but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

Sandeep Arora, Eeshaan Ranjan

Department of Dermatology, Command Hospital Air Force, Bengaluru, Karnataka, India

Correspondence: Dr. Sandeep Arora,
Department of Dermatology, Command Hospital Air Force, Ulsoor,
Bengaluru - 560 007, Karnataka, India.
E-mail: aroraderma@gmail.com

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