

# Application of cooled hydrogel dressing to minimize dyspigmentation from laser tattoo removal



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## CLINICAL CHALLENGE

Lasers have transformed tattoo removal via the principle of selective photothermolysis, but removing tattoos in darker-skinned patients presents challenges. Post-treatment hypopigmentation and hyperpigmentation, which occur more frequently in darker-skinned patients because of increased competing epidermal melanin and resulting thermal injury to the surrounding tissue, are often difficult to treat and may cause dissatisfaction and anxiety for patients.<sup>1</sup> Although methods such as use of a nonablative fractional resurfacing laser, 308-nm excimer laser, and topical bimatoprost may be utilized to ameliorate the complications of tattoo removal, accessible and economical strategies to decrease the risk of dyspigmentation would be desirable.

## SOLUTION

To reduce the risk of dyspigmentation, a refrigerator-cooled, nonstick, clear hydrogel dressing is applied over the tattoo immediately before laser treatment, and lasing is performed through the hydrogel dressing (Figs 1 and 2). This technique enhances epidermal protection both by cooling the skin through direct contact before treatment and by having the hydrogel dressing act as a “heat sink” during treatment. The hydrogel, the composition of which is 96% water, allows for rapid heat conduction away from the skin’s surface to the dressing. The robust membrane allows visualization of the tattoo, enables transmission of incident laser energy, enhances index matching and optic coupling into the skin, and can withstand a wide range of energies at commonly used wavelengths.<sup>2</sup> Hydrogel dressings are commercially available off the shelf and economical (averaging approximately \$1 or less per dressing), thus allowing for easy, widespread adoption. Additional benefits of the technique include reduced laser-induced tissue splatter and increased patient comfort from the cooling effect.

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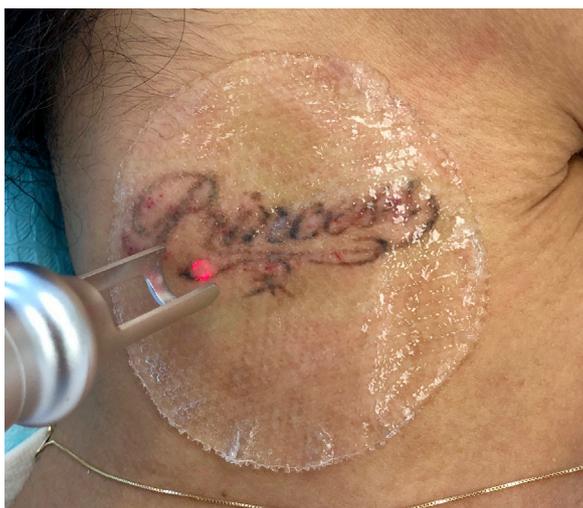
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**Fig 1.** Lasing is performed through a precooled, nonstick, clear hydrogel dressing, which is applied over the tattoo immediately before laser treatment to minimize post-treatment dyspigmentation, especially in darker-skinned patients.



**Fig 2.** The desired end point of mild epidermal whitening reaction is achieved at the treated areas (the letters *Pri* and the decorative lines below the letters) during laser tattoo removal by lasing through the hydrogel dressing in a darker-skinned patient.

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