

Treatment of Large Bulla Formation after Tattoo Removal with a Q-Switched Laser

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ABSTRACT

Widely considered the gold standard treatment option for tattoo removal, the use of Q-switched lasers may very rarely result in the formation of large bulla. While very disconcerting to patients, these lesions are easily managed and, with proper care, heal quickly with no long-term consequences. The authors present three cases of patients who had bullous reactions shortly after receiving Q-switched laser treatment of tattoo ink. Bullous formation in all three patients was treated successfully. (*J Clin Aesthetic Dermatol.* 2010;3(1):39–41.)

It is well established that Q-switched lasers are the gold-standard treatment for tattoo ink removal.^{1,2} While some unwanted side effects may be associated with the treatment, it is important to distinguish between transient adverse events and true treatment complications. In this article, the authors present three patients who had bullous reactions shortly after receiving Q-switched laser treatment of tattoo ink. All three patients experienced an excellent, nonscarring recovery.

CASE REPORT

Three clinic patients were treated with a Q-switched neodymium-doped yttrium aluminium garnet (Nd:YAG) laser independently in 2009 for laser tattoo removal (Hoya ConBio MedLite C6 laser; initial treatment setting = 6mm/3.0J). All three patients had been previously treated approximately 6 to 8 weeks earlier with the same laser device and similar settings without complications. None of the patients received treatment for a tattoo that covered up another tattoo. Approximately 18 to 24 hours after a particular laser treatment, all three patients reported painful blisters and were instructed to return to the office (Figures 1–3). Each patient denied the use of topical, over-

the-counter antibiotic ointments or photosensitizing medications. Additionally, the patients failed to elevate and intermittently ice the recently treated tattoo areas as instructed.

In each case, large, tense blisters were cleansed with alcohol, and serous fluid was aspirated from each bulla with a syringe and a 22-gauge needle until flat. The roof of each bulla was left in place and gentle pressure was applied to keep the blister roof in contact with the underlying structures. The areas were coated with petrolatum ointment and dressed with a bandage offering sufficient compression. As implementation of laser light is a sterile procedure, infections in the treated area occur very rarely and oral antibiotics were withheld. A biopsy was not taken for histopathological evaluation as the cause of the bulla was evident. Over the following two weeks the patients reported spontaneous desquamation around the affected areas without manipulation. In all three cases, the areas healed appropriately without signs of scarring. Pigmentary changes were appreciated, but were not permanent in nature. Tissue texture changes, hypertrophic scars, or keloids were not present (Figures 3a and 3b).

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FIGURE 1A. Tense bulla formation on the arm 24 hours after Q-switched laser treatment to the area



FIGURE 1B. Well-healed treatment area



FIGURE 2A. Tense bulla overlying the treated tattoo. Note that no signs of an infectious process are present.



FIGURE 2B. Well-healed treatment area

DISCUSSION

The mechanism of action for tattoo removal with a Q-switched laser is selective photothermolysis via photoacoustic fragmentation of tattoo particles.³ It is very likely that the authors' patients experienced extensive cytolysis of epidermal cells secondary to thermal injury from the laser treatment resulting in large bulla formation. The patients' nonadherence with recommended aftercare instructions might also have contributed to the bullous reaction.

Although very disconcerting to patients, bullae associated with Q-switched laser tattoo removal treatments, when treated appropriately and promptly, appear to have no long-term consequences. If the epidermal layer in the patients had been accidentally or intentionally removed prematurely, side effects may have included prolonged healing time and permanent tissue texture changes and dyschromia. Following laser

treatment, proper aftercare techniques including elevation, rest, and intermittent icing should be recommended to patients to minimize adverse effects. The application of plain petrolatum dressing without steroids was sufficient in the patients, although no comparison to other topical agents could be made from the authors' retrospective reports. Of note, both topical steroids and topical antibiotics used in postoperative tattoo dressings increases the risk of an allergic contact dermatitis.⁴ Reports have also stressed on an increased risk of hemorrhagic bullae formation in patients with "cover-up" tattoo undergoing Q-switched tattoo laser treatments.⁵

CONCLUSION

Although very disconcerting to patients, it is the contention of the authors that the very infrequent occurrence of bulla associated with Q-switched laser tattoo removal treatments, when treated appropriately and



FIGURE 3A. Grouped bullae formation shortly after Q-switched laser treatment to the area

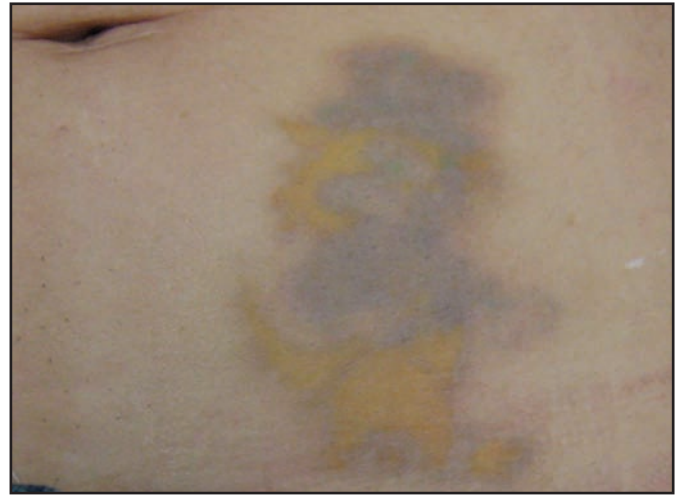


FIGURE 3B. Well-healed treatment area

swiftly, will have no long-term consequences. With more than 45,000 tattoo laser procedures performed and supervised, the authors have significant experience with undesired consequences of Q-switched laser tattoo removal treatment and note that bulla formation occurs in less than one in a thousand treatments. Following laser treatment, proper aftercare techniques including elevation, rest, and intermittent icing should be recommended to patients so that the chances of adverse effects, including but not limited to bulla, are reduced. Additionally, healthcare practitioners performing laser tattoo services should consider using a cooling device during the procedure to minimize the chances of adverse events.

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