

# Use of a Diode Laser to Restore Skin Scarred by Cosmetic Tattooing on the Mouth

Angie Mott, RDH\*

Lasers have been successfully employed in the removal or treatment of tattoos, scars, and other skin disruptions, in addition to their use in treating hard and soft oral tissue. Some situations requiring laser use, however, are more delicate than others, including cosmetic tattooing on the face or mouth. As these once-unique circumstances become more commonplace, dental hygienists may find themselves more exposed to dental lasers. Furthermore, as laser technology continues to evolve, so will the role of the dental hygienist in the application of this technology to the benefit of the patient. The following article presents a case in which a dental laser was employed in the treatment of lesions caused by cosmetic tattooing on the mouth.

Permanent makeup is a cosmetic technique in which pigmentation of the dermis (ie, tattooing) is used to mimic the effects of makeup (eg, eyeliner, eyeshadow, blush, lipstick). Whereas tattoos are commonly associated with distinct marks or designs, permanent makeup is meant to enhance one's appearance in a manner similar to cosmetics. This procedure is often expected to have a more natural-looking, aesthetic result, and it is often referred to as cosmetic tattooing. Some agencies, in order to remove the negative connotation associated with tattoos, refer to the procedure as intradermal micropigmentation, dermagraphics, or micropigment implantation. This procedure is commonly sought after by individuals who wish to wear makeup, but cannot do so easily as a result of allergic reactions to common cosmetic products, vision deficiencies, or limited or restricted movement of the fingers or hands. Cosmetic

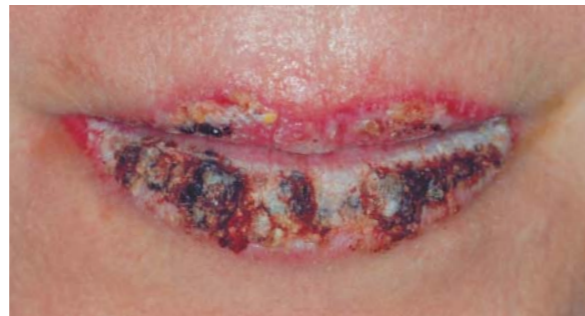


Figure 1. Lesions visible on patient one day following cosmetic tattooing.



Figure 2. After three weeks of treatment with both a diode and Nd:YAG laser, lips were entirely free of lesions. No scarring was noted.

tattooing may also be used to camouflage skin that is scarred or otherwise unaesthetic. Furthermore, some individuals seek cosmetic tattooing simply as a means to save time during their makeup-application routine.

## Regulation and Procedure

Cosmetic tattooing regulations vary by location. In the United States, the Department of Health oversees pro-



Figure 3. Three months following the initial tattooing, the patient decided to touch up her lips with a second cosmetic tattoo treatment.



Figure 4. Laser treatment took place regardless of appearance of lesions, and patient did not experience any difficulties.

cedure, but State Boards of Cosmetology may also be involved in state regulation. Who performs the procedure varies as well: specialists may include plastic surgeons, licensed cosmetologists, or aestheticians. Because of regulation discrepancies, patients considering treatment need to be especially diligent in choosing a reputed specialist.

The procedure usually first involves the application of a topical anesthetic, due to the sensitivity of the skin being tattooed. The ink usually consists of vegetable products, which are injected into the top layer of the dermis via a hollow needle. The needle used for cosmetic tattoos is finer than those commonly employed for most traditional tattoos, due to the sensitivity of the regions being treated. The tattoo is often applied via a rotary instrument, which causes the needle to vibrate and drive the pigment into the dermis after being dipped into the ink. Due to the delicacy of the procedure, however, some cosmetic tattoos are applied by hand. After the treatment, the area is cleaned and sanitized. The results, often very bright and "overdone" initially, fade after a few days to a more natural look. The term "permanent makeup" is in some ways a misnomer; touchups are generally required every three to five years.

As with most body modification procedures, tattooing can result in complications postoperatively.<sup>1,2</sup> Cosmetic tattoos, being performed on the more delicate facial tissues, are particularly susceptible to such complications. Patients may experience infections caused by unsterile equipment or poor postoperative mainte-

nance. Healing can be difficult, and scars or inflamed tissue can damage delicate skin. Rarely, patients may develop an allergic reaction to the pigment, especially if the procedure was not performed by an appropriately licensed specialist. Several protocols are available as treatment methods to remove cosmetic tattoos or resolve poor healing: 1) Dermabrasion employs a wire brush or sanding tool to slough away pigmented skin layer by layer; 2) Salabrasion and 3) scarification remove pigment via salt solution and acidic solution, respectively; 4) Surgical treatment involves excision of the pigmented skin; 5) Camouflaging covers the tattoo with naturally colored pigments; and 6) Laser treatment breaks up pigment particles, which are then absorbed and destroyed by the body's immune system. The use of a diode or Nd:YAG laser can lighten tattoos and treat poorly healed skin, without damaging the surrounding tissue.<sup>3</sup>

## Case Presentation

A 57-year-old female patient presented with severe lesions and scarring following cosmetic tattooing on her mouth (Figure 1). Her goal in receiving the cosmetic-tattoo treatment was to eliminate the need for applying makeup on a daily basis, and to create more defined and fuller lips. The cause of the lesions was unclear; the patient suffered from several allergies, however, and the lesions may have been the result of an allergic reaction. The patient desired to have these lesions reduced quickly and painlessly, and laser treatment was determined as the best course of action.



**Figure 5.** Three days after third cosmetic-tattoo procedure. The patient made a laser appointment before initiating the tattoo treatment, to ensure minimal disruption of the dermis.

The area was divided into three sections, and both an Nd:YAG and Diode laser were employed (ie, American Dental Technologies, Corpus Christi, TX; Hoya ConBio, Fremont, CA). The laser was used in a sweeping motion 2 mm above the lesions, crosshatching over all areas. The manufacturer instructions were referred to in order to ensure the most appropriate settings were applied. Lasing took place for approximately 60 seconds, and safety precautions (eg, 0.1% micron mask, high volume suction, safety glasses) were used. As the areas were treated, progress was charted. Positive results were visible two days following treatment, and within a week, the lesions were almost gone. The patient continued to exhibit recovery at two- and three-week follow up appointments (Figure 2). Three months later, the patient presented once more, having chosen to touch up her cosmetic tattooing (Figure 3). The authors had already planned to re-treat areas, regardless of the appearance of any lesions, and laser treatment was performed the day after the cosmetic touch-up. As before, both a diode and Nd:YAG laser were used in treatment to smooth the area and protect against the appearance of scarring; just enough laser energy was applied to the area to protect the lips (Figure 4). The patient then indicated that she planned a third cosmetic-tattooing session two months later, and an appointment for additional laser treatment was made immediately (Figure 5). Once again, the use of a diode and Nd:YAG laser prevented the formation of any additional lesions (Figure 6).



**Figure 6.** Final results, after three cosmetic tattoo treatments, with laser followup treatment every time. Patient did not experience any lesions after initiating laser treatment, and was very pleased with the aesthetics of her cosmetic tattoo.

### Conclusion

Tattooing is becoming increasingly popular in the form of cosmetic, intradermal micropigmentation. Due to the delicate features treated during cosmetic tattooing, however, special care must be employed both during the tattoo application as well as during any follow-up treatment. In the aforementioned case, use of a laser by a dental office was the safest and most simple means by which to treat lesions caused by a cosmetic tattoo on the mouth.

The capacity for the dental hygienist to use a dental laser is dependent upon the Dental Practice Act of the state in which he or she is practicing. In the case presented herein, a dentist was present for the diagnosis of the patient's condition, but the hygienist handled the laser during treatment and followed up with the patient independently of the dentist.

As lasers become more prominent in dental offices, hygienists can expect to face a more prominent role in the use of lasers to treat and heal patients who present for a wide variety of concerns.

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*The author declares no financial interest in any of the products used herein.*

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### Continuing Education (CE) EXERCISE NO. 2

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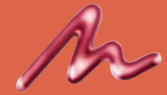
Answers to the 10 multiple-choice questions for this CE exercise are based on the article "Use of a Diode Laser to Restore Skin Scarred by Cosmetic Tattooing on the Mouth" by Angie Mott, RDH.

Upon reading this article, the reader should be able to:

1. Understand the complications that can occur due to cosmetic tattooing of the mouth.
2. Appreciate the hygienist's evolving role in laser-technology applications.

#### Review Questions:

1. What is cosmetic tattooing?
  - A. The application of pigments beneath the dermis to form a decorative, often bold design.
  - B. The application of pigments beneath the dermis to mimic the effects of makeup or to enhance the colors of the skin, usually on the face, lips, or eyelids.
  - C. The use of lasers to mimic the effects of makeup permanently on the skin.
  - D. The removal of tattoos in order to achieve an aesthetic effect.
2. Which of the following is NOT another term for cosmetic tattooing?
  - A. Intradermal micropigmentation.
  - B. Micropigment implantation.
  - C. Spectroscopic microimplantation.
  - D. Dermagraphics.
3. When did the patient make her appointment for the third laser treatment?
  - A. Before the cosmetic tattooing took place.
  - B. The same day as the cosmetic tattoo procedure.
  - C. Two months after receiving the cosmetic tattoo.
  - D. Only after the appearance of lesions.
4. Why is the term "permanent makeup" a misnomer in some ways?
  - A. The results often appear very bright initially, and fade after a few days to a more natural look.
  - B. Touchups are generally required every three to five years.
  - C. The effect can be removed easily via a variety of procedures.
  - D. The procedure is not just used to produce the effects of makeup.
5. What postoperative complications can occur from cosmetic tattooing?
  - A. Infections.
  - B. Scars.
  - C. Allergic reactions to pigments.
  - D. All of the above.
6. What does dermabrasion refer to?
  - A. The sloughing of skin layer by layer to remove pigment.
  - B. The use of a salt or acidic solution to remove pigment.
  - C. The excision of pigmented skin via surgery.
  - D. The use of naturally colored pigments to cover tattooed skin.
7. Which type of laser was employed in the tattoo-removal case presented herein?
  - A. Nd:YAG.
  - B. Er:YAG.
  - C. Diode.
  - D. Both A and C are correct.
8. What was the purpose of laser employment during the second treatment?
  - A. To break down the pigment in the cosmetic tattoo.
  - B. To treat lesions that had appeared as severely as they had after the first tattoo.
  - C. To smooth the area and protect the lips.
  - D. None of the above.
9. What specialist may be indicated for the application of cosmetic tattoos?
  - A. Plastic surgeons.
  - B. Licensed cosmetologists.
  - C. Aestheticians.
  - D. All of the above.
10. Within the scope of this article, what is the purpose of the Dental Practice Act?
  - A. To determine whether a dentist or hygienist can administer cosmetic tattoos.
  - B. To establish the type of laser used in tattoo removal.
  - C. To determine the extent to which the dental hygienist may use a dental laser.
  - D. To establish which procedures are candidates for laser usage.



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