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A Non-Laser Method to Reverse Permanent Makeup and Tattoos

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Techniques for tattoo removal have been under investigation for many years. Disadvantages of the early methods such as salabrasion, surgical excision and infrared coagulation included unpleasant scarring.[1] Recent studies are concentrating on various laser treatments such as pulsed carbon dioxide laser, Photoderm PL laser, Alexandrite laser and Q-switched Nd:YAG laser.[2-6] The incomplete removal of certain tattoo colors, scarring, or skin textural change and skin hypopigmentation are possible side effects associated with the laser treatments.[7,8] Major efforts are now focusing on minimizing these side effects. This paper reports on an alternative non-laser approach which has been developed to remove tattoos with minimum side effects, and may provide a new dimension for tattoo removal and removal of permanent makeup.

Materials and Methods

A permanent makeup tattooing machine (FG-999L) and triple stainless tattoo needles (Fu-Guan Beauty Supplies Co. Ltd., Taipei, Taiwan) were used as the applicator. Rejuvi Tattoo Remover (a brownish paste from Rejuvi Laboratory Inc., South San Francisco, CA) was used as the treatment product. A topical anesthetic solution—Painaway (Mirage Marketing Ltd., England)—was used to minimize possible discomfort during treatments. Bacitracin Zinc Ointment (E. Fougera & Co., Melville, NY) was used to help skin recovery as a home care product after tattoo removal. A cosmetic magnifier lamp, cotton pads, green soap, and other common items were used in treatments.

Patients

A total of 98 patients of age range from 20 to 50 years were entered into this study. Of the 98 patients, 40 were Caucasian and the rest were Asian (mainly Oriental). Approximately 49% of the patients had body tattoos (mostly on arms) and approximately 51% had permanent makeup (mostly tattooed eyebrows). The permanent makeup on eyeliner and lips were not chosen due to safety considerations. The main colors of body tattoos were black, blue and brown. Red and yellow were also involved in a few cases. The main colors of tattooed eyebrows were black and brown. In a few cases, golden color was involved. All tattoos in this study had been in the skin for less than 10 years.

Treatment Procedures

The treatment is almost identical to the traditional tattoo-over process, i.e., making a new tattoo exactly over an existing tattoo with Rejuvi Tattoo Remover substituted for new tattoo pigments. The procedure involves four basic steps. The first step is to puncture in the colored area to provide a good access to tattoo pigments in the skin. In this step, appropriate depth of the puncture and puncture on the entire colored area must be well controlled for a desirable result. Bleeding should be minimized. The second step is the extraction of tattoo pigments. In this step, Rejuvi Tattoo Remover is deposited into the punctured skin and a sufficient physical contact with the tattoo pigment is made. Just like the tattooing process, the first and second steps are always performed together for convenience and better results. This is achieved by frequently dipping the needle into the Tattoo Remover during the puncturing process. The excess paste on the skin is wiped frequently with a damp cotton; Painaway is also applied to minimize the discomfort as needed. These steps are repeated a number of times (usually 6-10 times) to achieve good extraction. The third step is to apply the Tattoo Remover on the treated area and allow it to remain for 6-8 days for further extraction. In this step, there should be no water contact to the treated area until the scab peeled off itself. This is to ensure good extraction and to avoid possible infection. The fourth step is to apply Bacitracin Zinc (other antibiotic ointments could be used as well) to help skin heal-

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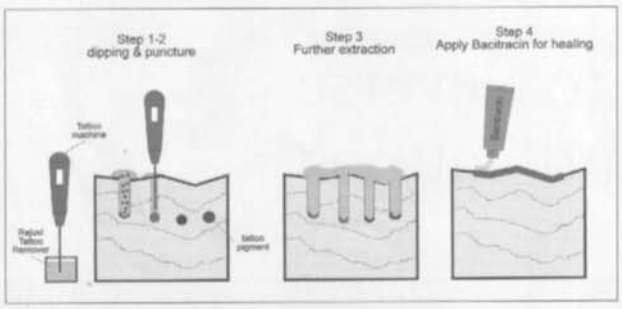

Fig. 1: The treatment procedures: steps 1-4.

ing and to diminish redness. These four steps are illustrated in Figure 1.

Results

In step 1-2 for the removal of tattooed eyebrows, the cotton pad used to remove the tattoo remover paste showed significant tattoo colors. After several repetitions of step 1-2, little color was observed on the tattoo remover paste; probably indicating the completion of the initial extraction. For arm tattoos, little tattoo color was generally observed in the tattoo remover paste even after 10 repetitions. It should be noted that a significantly deeper puncture was needed for body tattoos compared with permanent makeup. The slightly yellowish scab generally peeled off in 6-10 days depending upon the arm tattoos or tattooed eyebrows as well as other factors.

After the scabs peeled off, the tattoo colors were almost totally diminished, in a few cases some very light colors still remained (approximately 10-15%). The results are summarized in Table 1. The success rate of tattoo color removal was 100% for permanent makeup and 92% for body tattoos. The scarring rate was 0% for permanent makeup and 6% for body tattoos. None of the cases demonstrated destruction of skin's natural pigment, otherwise known as depigmentation or hypopigmentation.

The treated skin area showed a significant redness after scab peeling off. The erythema gradually diminished during the skin healing process over a period of 2 to 6 months. It was noticed that skin recovery for removal of tattooed eyebrows was considerably faster than the removal of body tattoos (Fig 2). Figure 3 shows two sets of tattooed eyebrows, the opaque paste of Tattoo Remover on the treated area, and complete skin recovery (about 2 months).

Discussion

The tattoo-over with Rejuvi Tattoo Remover is virtually a chemical extraction method for removing tattoos.[9] Almost all tattoo pigments are inorganic colorants such as iron oxides, which are insoluble in water and most organic solvents. Rejuvi Tattoo Remover contains several inorganic substances that are chemically similar to tattoo pigments. "Likes attract likes," demonstrating a good miscibility between the Tattoo Remover and tattoo pigments under wet contact condition. As a consequence, Rejuvi Tattoo Remover is able to soften tattoo pigments and detach them from the skin tissue. The composition of Rejuvi Tattoo Remover appeared to be well tolerated by the skin and gave minimal damage compared with all other methods for tattoo removal.

Tattoo pigments for permanent makeup are generally located in the upper or mid-epidermis layer. In most cases, permanent makeup was on the skin for only a few years. Therefore, it is relatively easy to remove and deep puncture is not necessary. As a consequence, there is little scarring for removal of permanent makeup.

In contrast, the pigments in body tattoos are generally deep in the skin and even below mid-dermis layer. In most studied cases, the tattoos were on the skin for more than 5 years. Therefore, a significantly deeper puncture was required. As opposed to removal of permanent makeup, the extraction in step 1-2 did not remove a significant amount of the pigments, as noted on the cotton pad after wiping. Further extraction in step 3 with much longer contact time played a substantial role in tattoo removal. Scars may be caused by deep puncture as well as the puncture area. For instance, acupuncture needles usually penetrate very deep into skin (sometimes more

TABLE 1
Removal and Scarring for Tattoo Removal and Permanent Makeup

	Caucasian Skin	Asian skin	# of Removal*	# of Scarring**
Permanent Makeup	10	38	48 (100%)	0 (0%)
Body tattoo	30	20	46 (92%)	3 (6%)

* Removal was defined as no appreciable color after one treatment.

** Scarring was defined as a visible scar 6 months after the treatment.

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Fig. 2: Forearm tattoo before removal (top), 4 weeks after removal (middle), and complete skin recovery after about 4 months (bottom).

Fig. 3: Two sets of tattooed eyebrows before removal, immediately after removal, and complete skin recovery after about 2 months.

Summary

The chemical extraction technique is a simple, effective, painless, and quick method for tattoo removal and removal of permanent makeup. However, good skills and experience in tattooing or permanent makeup are required to perform this technique because it is virtually a tattoo-over process. In addition, the success of this method depends upon how the tattoo was applied and length of time it has been on the skin. A tattoo performed by a more experienced tattoo artist may be easier to remove since the pigment is evenly injected in the same level of the skin. However, a tattoo that has been on the skin for a considerable length of time may be more difficult to remove than a new one. Nevertheless, the chemical extraction method has a high success rate if the treatment is adequately performed.

than 1") but do not cause scars because of the tiny puncture area. In this sense, a gentle permanent makeup machine is preferred to a powerful tattoo machine. A small or medium size needle (triple needle) is safer than a large needle. On the other hand, a large needle can puncture the skin area faster to shorten treatment time.

After tattoo removal, there was always a significant redness on the treated skin, which gradually diminished as the skin healed. It was observed that skin healing was faster for removal of permanent makeup than tattoo removal. That indicates that the depth of puncture is a crucial factor affecting skin healing and the fading of redness. It was also found that Bacitracin Zinc could speed up the skin healing process significantly (diminishing the redness), particularly when covered with a bandage at the initial healing stage.

It is interesting to observe that the chemical extraction method could remove all tattoo pigments (there was no color preference) if the puncture is made properly. This has an advantage over laser methods. Only one treatment is needed for a tattooed area if puncture is properly made. For a small tattoo (2 square inch or tattooed eyebrow), it usually takes less than an hour. In general, the time needed for tattoo removal is shorter than that for making the same tattoo. A large tattoo may be removed section by section to reduce the skin discomfort level.

All patients in the study did not feel pain or discomfort after applying the topical anesthetic solution. Painaway was applied on the treated area approximately 2 minutes before puncture and again immediately after puncture. It could be applied again during the repetition procedures (step 1-2) if needed.

Disclosure of Interest: Dr. Cheng is the Director of Research & Development at Rejuvi Laboratory, Inc.

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References

1. Geraci R. Need to get something off your chest? *Men's Health;* Emmaus;1997;12[10]:36-37.
2. Herbich GJ. Ultrapulse carbon dioxide laser treatment of an iron oxide flesh-colored tattoo, *Dermatol Surg.* 1997;23[1]:60-61.
3. Chang SE, Choi JH, Moon KC, et al. Successful removal of traumatic tattoos in Asian skin with a Q-switched alexandrite laser. *Dermatol Surg.* 1998;24[12]:1308-1311.
4. Fitzpatrick RE, Goldman MP. Tattoo removal using the alexandrite laser. *Arch Dermatol.* 1994;130[12];1508-1514.
5. Jones A, Roddey P, Orengo I, et al. The Q-switched Nd:YAG laser effectively treats tattoos in darkly pigmented skin. *Dermatol Surg.* 1996;22[12]:999-1001.
6. Kilmer SL, Lee MS, Grevelink JM, et al. The Q-switched Nd:YAG laser effectively treats tattoos A controlled dose-response study. *Arch Dermatol.* 1993;129[8]:971-978.
7. Kilmer SL. Laser treatment of tattoos. *Dermatol Clin.* 1997; 15[3]:409-417.
8. Zesiger S. Regrets: tattoo removal: The pain! The pain!. *Fortune;* New York; Nov 9, 1998;138[9]:40.
9. Cheng W, Reserving tattoos. *Les Nouvelles Esthetiques* American edition, 1997;3:39-44. ■