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Original Article

Outpatient management protocol of skin tattoos with simple chemo/dermabrasion technique

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Abstract

Background As the incidence of tattoo placement continues to increase, so does the demand for tattoo removal. Treatment of tattoos with various different methods often yields unsatisfactory results and are costly to the patients. Ideal method should be highly effective for removal of tattoos without significant scars or permanent pigmentary change to the skin.

Objective We present our clinical experience on cosmetic tattoo removal and the important issues practitioners should consider in the management of tattoos.

Patients and methods We have established a cost effective management protocol that could be followed and performed as an outpatient. This protocol consist of three parts, preoperative skin preparation utilizing all-trans retinoic acid, secondly an operative surgical procedure of simple dermabrasion followed by a third stage of intensive postoperative skin care protocol with local application of anti-scar formation ointments. 12 male patients were treated under local or general anesthesia with this protocol.

Results Tattoo pigment was removed successfully in all 12 patients. One patient each developed hypertrophic scar and post-inflammatory hyperpigmentation which subsequently improved.

Conclusion Chemo/dermabrasion was successful with a high rate of tattoo removal (100%) and less incidence of hypertrophic scar formation of the treated skin.

Key words
Tattoos, dermabrasion, all-trans retinoic acid, Contractubex®

Introduction

Tattoos are placed for different reasons. The trend is that nowadays, more and more young adults request that skin placed tattoos be removed. The reasons for tattoo removal can be personal, social, cultural, and medical.[1] Removal methods have been many and varied.[2-6] Each method can be complicated by hypertrophic scarring, pigmentary changes, and/or insufficient pigment removal. Because of the almost inevitable probability of scarring, removal of these skin tattoos has been difficult at best. Laser treatment of tattoos is popular nowadays.[7-12] The most common adverse effects following laser tattoo treatment include textural change, scarring, and pigmentary alteration. Also, treatment requires multiple sessions and it is financially costly to the patients.

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Results of dermabrasion in the removal of variously motivated cosmetic tattoos have been presented previously by many physicians with variable success rate.[13-16] We report the successful removal of cosmetic tattoos with a unique innovative protocol of chemo/dermabrasion method. First we use drugs at the pre-operative stage by skin application of all-trans retinoic acid 0.05%.[17-20] Such application helps improving skin healing posttreatment. Also drugs, such as hydrocortisone[21] and Contractubex®[22] were used postoperatively to control scar formation. The effect of these drugs over the skin and residual surgical scars are well known in clinical practice. The operative portion of our treatment protocol consists of using classical dermabrasion machine and instruments. We dermabrade deeply the tattoo skin followed with more superficial dermabrasion of the surrounding normal tissues in an irregular fashion. Thus, the healed scar will be deprived of a well defined shape and pattern of a tattoo.

Patients and methods

All patients were initially assessed and their skin tattoos were carefully evaluated. Data were collected for each patient tattoo including type, location, size, and duration (**Figure 1**). The first stage of treatment comprised daily local application at night of topical Retin A® cream, in concentrations of 0.05% for 4 weeks. The patient was instructed to apply it over the tattoo and the surrounding skin. Also, during this period the patient was asked to use sunblock cream over the treated skin in day time.

The second operative stage included simple dermabrasion surgical technique using standard instruments. We have developed our dermabrasion technique, where we would dermabrade deeply the skin pigments to ensure removal followed by superficial dermabrasion of the normal skin surrounding the tattoo in an irregular pattern (**Figure 2**). Thus, the healed skin scar will be in a diffuse fashion lacking the original shape of its previous tattoo. Antibiotic meshed gauze was applied over the wound and kept intact for one week.

The third postoperative stage was mainly skin care of the resultant surgical scar. We have established a combined pharmacological protocol for the care of surgical scars. Once the dressing was removed from the skin, a mixture of 1% hydrocortisone and Contractubex® gel (Merz Pharma, Germany) was applied twice daily over the wound for one month. Following this, the patient was instructed to apply a silicone sheath over the scar for additional 2 months. Approximately, the duration of treatment is 4-6 months. All patients were evaluated periodically as an outpatient to asses wound healing and any associated possible complications.

Results

There were 12 male patients with average age of 29 years. Only two of them had bilateral tattoos. All surgery was performed under local or general anesthesia as one day case procedure. Two patients (16%) developed mild wound infection which was treated with local application of antibiotic ointment and frequent dressing. All skin tattoo pigments were removed completely in one session. The scar quality was excellent with remarkable patient satisfaction. The

Figure 1 Cosmetic skin tattoo in adult male patients.

Figure 2 Deep dermabrasion of the tattoo skin pigments followed by superficial dermabrasion of the surrounding normal skin.

residual scars were fine, flat with loss of its previous tattoo shape (**Figure 3**). Incidence of hypertrophic scar formation was low; only in one (8%). There were residual hyperpigmented skin patches in two patients (16%). The hypertrophic scar and hyperpigmented skin changes did improve

Figure 3 The residual scar with complete removal of the tattoo.

subsequently over a year.

Discussion

In general, patients with self-made tattoos call for their removal. Motivation, available treatment modalities, and cost in terms of money, pain, and risk of disfigurement all enter into the decision making to have the tattoos removed.[1] Usually, tattoos were managed by direct pigment removal with surgical excision,[23] dermabrasion, chemical peeling,[24] salabrasion,[25] and laser therapy. However, residual scarring and dyspigmentation were as undesirable as the original tattoos.

Preoperative skin preparation with all-trans retinoic acid accelerates wound healing post dermabrasion.[17,18] all-trans retinoic acid

pretreatment on dermabrasion site sustained the effects of dermabrasion longer and showed synergistic effects of dermabrasion and induced enhanced wound healing. The dermabrasion was concentrated on the affected skin tattoo pigments tissues with additional superficial dermabrasion surrounding normal skin in an irregular fashion. This technique is easily reproduced and highly effective in eradicating tattoos with good quality scar formation.

We would like to emphasize the role of adequate postoperative skin care treatment to maintain the fine results of the initial treatment. In general, we would like to use a mixture of two anti-scar forming medications, Hydrocortisone and Contractubex® over post-operative surgical scars in our clinical practice.[22] The wound healing effect of each drug is well documented in the literature.

Conclusion

A well-established outpatient treatment protocol in the management of skin decorative tattoos can achieve effective removal. Our combined protocol can be relied upon to produce good cosmetic results with scant risk of complications. Combined approach of both surgical and pharmacological techniques would be more effective to have good surgical outcome with better scar quality and higher patient's satisfaction.

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Authors Declaration

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