

Complications of Eyelash and Eyebrow Tattooing: Reports of 2 Cases of Pigment Fanning

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Eyelash and eyebrow tattooing are commonly performed procedures that have a very low rate of reported complications. We describe one case of infraorbital pigmentation after eyelash tattooing and another of periorbital pigmentation after eyebrow tattooing. Although most complications related to eyelash and eyebrow tattooing, including pigment fanning, have been reported by ophthalmologists, pigment fanning is also of concern to dermatologists.

Since ancient times, the eyes have been a significant means of attraction between the genders. Enhancement of the eyes by framing the lids with exotic paint or coloring has been practiced in every culture since the days of Cleopatra, and pencil, liquid eyeliner, and mascara form an important part of today's cosmetic market.¹ However, makeup in general—and eye makeup in particular—has the disadvantage of impermanence and can smudge or smear at inopportune times.²

Today, eyelash and eyebrow tattooing are widely practiced forms of cosmetic enhancement. Complications related to tattooing are numerous and include infection, lichen planus, and sarcoidosis.³ Eyelash and eyebrow tattooing may induce such

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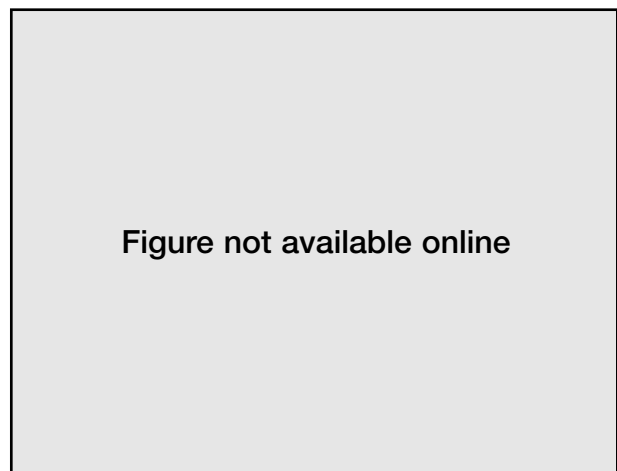


Figure 1. Bluish discoloration on the right infraorbital area in patient 1.

complications but also may result in eyelid necrosis and pigment fanning.⁴

Case Reports

Patient 1—A 31-year-old Korean woman presented with a 4-month history of dark blue pigmentation on the right infraorbital area (Figure 1). Both sets of eyelashes had been tattooed a bluish black 3 years earlier by an amateur tattoo artist. The patient's medical and family histories were unremarkable. She denied drug use, exposure to chemicals, or any dermatoses around the eye before the appearance of the infraorbital pigmentation. A Q-switched alexandrite laser was used in an attempt to remove the eyelash tattoo and infraorbital pigmentation. Eight subsequent laser treatments given at fluences up to 7.5 J/cm² led to clearing (Figure 2).

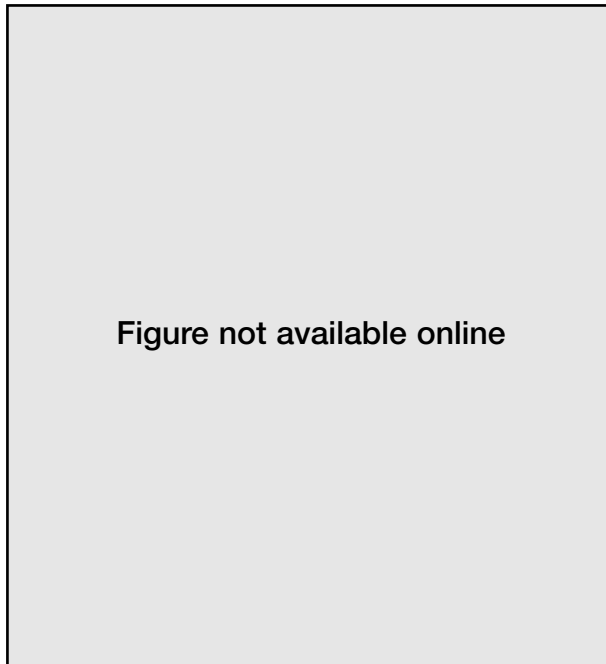


Figure 2. Marked improvement of the lesion after 8 treatments with the Q-switched alexandrite laser in patient 1.

Patient 2—A 50-year-old Korean woman presented with dark brown pigmentation on both medial canthal areas (Figure 3). She first noticed the pigmentation 18 months before presentation; since then, it had spread progressively. Eight months before the change in pigmentation, both eyebrows had been tattooed dark bluish black by an amateur tattoo artist. The patient's medical history showed that she had been treated for Graves disease with propylthiouracil and propranolol but had stopped the treatment 2½ years before presentation. She had not been exposed to any other chemicals, nor did she have inflammatory periorbital dermatoses. She rejected treatment of the eyebrow tattoo and periorbital pigmentation.

Comment

In general, the reported complications of tattooing include pyogenic infection, syphilis, leprosy, viral hepatitis, tuberculosis, verruca vulgaris, molluscum contagiosum, herpes simplex, herpes zoster, psoriasis, lichen planus, Darier disease, lupus erythematosus, keloids, erythema multiforme, localized scleroderma, sarcoidosis, and lymphadenopathy.^{3,5} Malignant melanoma, basal cell carcinoma, and pseudolymphoma also have appeared at tattoo sites.³ However, the most common complication seen is a hypersensitivity reaction to the pigment.⁶ Although such complications may be found following eyelash and eyebrow tattooing, the frequency of complications is

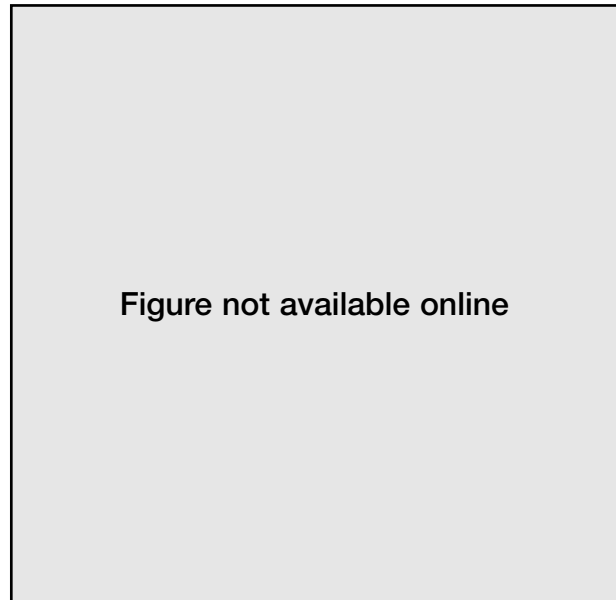


Figure 3. Dark brown pigmentation on both medial canthal areas in patient 2.

rare.² Other rare complications include eyelid necrosis and spreading of the pigment.⁴

Our patients had infraorbital and periorbital pigmentation, respectively. Differential diagnoses included drug- or chemical-induced hyperpigmentation, chrysiasis, and postinflammatory hyperpigmentation. Because our first patient denied drug use or exposure to chemicals, and our second patient had only taken propylthiouracil and propranolol, drugs or chemicals were an unlikely cause of the pigmentation. Chrysiasis refers to the effects of gold on tissues, particularly on light-exposed skin and sclerae resulting from the administration of parenteral gold salts.⁷ Characteristically, the periorbital region is affected initially. Neither of our patients had a history of taking gold, so it was excluded as a cause of pigmentation. Because our 2 patients had no history of inflammatory dermatoses or mechanical and chemical injuries on the lesion areas after tattooing, we could exclude the possibility of postinflammatory hyperpigmentation.

Histologic analyses were not performed because both patients refused tissue biopsies. However, a history of tattooing, as well as clinical pictures of lesions showing the same colors as the tattoos, suggested that pigment fanning following tattooing caused the pigmentation of their lesions. The etiology of pigment fanning is unclear. Superficial placement of pigment in the epidermis leads to early pigment fanning, but this superficial spread vanishes as the epidermis is shed. Long-lasting pigment fanning is thought to be related to pigment inserted too deeply

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into subcutaneous tissues, which may cause spread through the deep muscular and areolar layer along the course of lymphatic drainage.⁴ Other possible factors influencing pigment fanning may be gravity, individual variations in skin thickness, amount of pigment administered, and degree of inflammation after tattooing.

There is no curative treatment for pigment fanning once it has occurred.⁴ However, our first patient, who was treated with Q-switched alexandrite laser, showed marked improvement.

We have reported the cases of 2 patients with pigment fanning caused by eyelash and eyebrow tattooing. When a patient with infraorbital or peri-orbital pigmentation is encountered, pigment fanning must be considered if the patient has a history of eyelash or eyebrow tattooing.

REFERENCES

1. Angres GG. Eye-liner implants: a new cosmetic procedure. *Plast Reconstr Surg.* 1984;73:833-836.
2. Angres GG. Blepharopigmentation and eyebrow enhancement techniques for maximum cosmetic results. *Ann Ophthalmol.* 1985;17:605-611.
3. Mendez B, Burnett JW. Tattooing. *Cutis.* 1990;46:475-476.
4. Goldberg RA, Shorr N. Complications of blepharopigmentation. *Ophthalmic Surg.* 1989;20:420-423.
5. Goldstein N. IV. Complications from tattoos. *J Dermatol Surg Oncol.* 1979;5:869-878.
6. Koranda FC, Norris CW, Diestelmeier MF. Carbon dioxide laser treatment of granulomatous reactions in tattoos. *Otolaryngol Head Neck Surg.* 1986;94:384-387.
7. Smith RW, Leppard B, Barnett NL, et al. Chrysiasis revisited: a clinical and pathological study. *Br J Dermatol.* 1995; 133:671-678.