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Clinical Image

Incidental Corneal Pigmentation Following Cosmetic Permanent Eyelid Tattooing

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A 36-year-old woman presented to the ophthalmic emergency department complaining of ocular discomfort started 2 hours after eyeliner tattooing. The patient did not complain of any blurry vision, glare, or halo. On external examination, mild eyelid erythema and mild conjunctival injection were present in the left eye. Ocular movements were normal. A relative afferent pupillary defect was absent. The best-corrected visual acuity was 20/20. Slit-lamp biomicroscopy revealed a row of corneal pigmentations in the paracentral and central zone of the cornea. The pigmentations consisted of a similar pattern repeated approximately 15 times. Each pigmented area was 0.1 mm wide, and 0.3 mm long diffusing for 4 clock-hours in the paracentral and central zone. There was a clear zone between every spot. The black material seemed to be diluted approaching the center of the cornea (Figure 1). Indeed, the pigments penetrated the anterior stroma to the approximate depth of 100 microns.

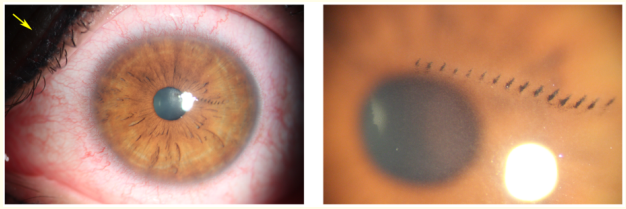

Figure 1: Photoslit image demonstrating a row of corneal pigmentations in the paracentral and central zone of the cornea. The pigmentations consist of a similar pattern repeated approximately 15 times. Pigmented area diffuses for 4 clock-hours in the paracentral and central zone. There is a clear zone between every spot. The black color seems to be diluted approaching the center of the cornea. The yellow arrow shows the eyeliner tattoo.

Due to the history of the eyeliner tattooing before the presentation, the pigmentation was attributed to the procedure performed on the eyelid. The patient's makeup artist was questioned about the details of the procedure. In brief, she used a version of a digital micro-blading device that worked multiply and repeatedly. The frequent digital blading entered the ink into the eyelid skin. The clear intervals between the tattooing were filled with repetition of the blading. We hypothesized that the inadvertent movement of the patient or blinking during the tattooing procedure caused the incidental corneal pigmentation and the clear intervals between the pigmentation are related to the special design of the device.

Regarding the brand of the applied tattoo ink, the ingredient was thoroughly investigated. The reported ingredients mainly consisted of carbon and iron oxide and logwood (a mineral extract from woods). There was no lead, cadmium, or nickel. Because of the inert nature of the ingredients, the proximity of pigmentation to the visual axis, and penetration into anterior stroma beyond the bowman's layer, the patient was treated by topical betamethasone eye drop (Every 6 hours) and Chloramphenicol eye drop (every 6 hours), and artificial tear (every 3 hours). The patient was closely observed. After 1 week, the border of pigmentations seemed to become faded without any infiltration or immunologic reactions.

Therefore, no needle scraping was performed. The patient was followed and steroid and antibiotic were continued for three weeks. Two weeks after the first presentation, the pigmentations were completely resolved without leaving any scar.

To our knowledge, this is the second report of incidental keratopigmentation after tattooing of the eyeliner [1]. Eyeliner tattooing is potentially dangerous because of its proximity to the ocular surface. Incidental tattooing of the conjunctiva and limbus has also been previously reported [2]. In addition to ocular surface injuries, eyelid trauma [3], adverse reactions [4] and Meibomian gland changes are among other risks of cosmetic eyeliner tattooing.

Our patient is unique regarding the pattern of keratopigmentation that represents the automated method of the procedure. Due to the application of topical anesthesia during the tattooing procedure, the patient is unaware of the corneal touch. Therefore, there might be an increased risk of injury to the cornea with the use of digital devices.

Our patient was treated conservatively based on the gradual fading of the color. The tattooing ink generally consists of water-insoluble materials [1]. This characteristic helps the pigmentation granules Longley remain on the skin. However, the resolving course observed in the present case proposes the active role of corneal epithelial and stromal physiology in the removal of foreign bodies. Direct application of tattoo ink on the anterior surface of the cornea, staining method, is one of the corneal tattooing modalities in patients with a corneal scar or iris defects [5]. However, gradual fading of the color remains the drawback of this technique. It is possible that a similar process to remove the pigmentations after corneal tattooing was involved in our patient.

Our report is limited by a lack of laboratory analysis of ink's ingredients. However, the absence of inflammatory reaction in our patient and gradual fading confirmed the inert nature of the ink's ingredients. In conclusion, we reported a patient with incidental keratopigmentation after cosmetic eyeliner tattooing. The ophthalmologist should be familiar with accidental injuries in individuals undergoing eyeliner tattooing. Conservative treatment after incidental keratopigmentation is proposed. However, further experience is needed to recommend this treatment.

Conflict of Interest

The authors declare no conflict of interest.

Informed Consent

The patient's consent was obtained to report this observation.

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