

# Surgical Excision and Autograft after Allergic Reaction to Tattoo Ink: A Case Report

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## ABSTRACT

*A 29-year old female patient suffered a hypersensitivity reaction after having a tattoo placed on the supra-malleolar area of her right-leg. Among other substances, the tattoo ink used contained red dye. Since the allergic reaction and its subsequent complications were refractory to conventional medical treatment, it was finally necessary to surgically remove the tattoo and cover the area with an autograft.*

**Keywords:** Allergic reaction, allergy, autograft, ink, tattoo

## La escisión quirúrgica y autoinjerto después de una reacción alérgica a la tinta del tatuaje: un reporte de caso

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## RESUMEN

*Se presenta el caso de una mujer de 29 años que sufrió una reacción de hipersensibilidad tras realizarse un tatuaje en la zona supramaleolar de la pierna izquierda que contenía entre otras tinta roja. Tras ver que la reacción alérgica y las complicaciones no remitían con el tratamiento médico hubo finalmente que recurrir a la cirugía, extirpando el tatuaje y cubriendo la zona con un autoinjerto.*

**Keywords:** reacción alérgica, alergia, autoinjerto, tinta, tatuaje

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## INTRODUCTION

Tattoos have been a part of custom, self-expression and identification in various cultures for centuries. Though complications are not frequent, tattoos can have adverse secondary effects (1–2). These include; acute inflammatory reactions, infections, oozing, itchiness, eczematous hypersensitivity, lichenoid reaction and granulomatous reactions (3). On occasions, either for clinical reasons or at the patient's own wish, it is necessary to remove the tattoo (4). Techniques for tattoo removal include; mechanical, chemical and thermal methods (5).

## CASE REPORT

This article describes the healing process of an allergic reaction to a red-ink tattoo on the supramalleolar external area of the right-leg of a female patient (Fig. 1).

A 29-year old woman visited the Dermatology Clinic because she was suffering from itchiness and erythema in the skin area where she had a tattoo placed. The reaction was particularly severe in the portion of the tattoo where red-ink had



Fig. 1: Tattoo on the supramalleolar zone of the right-leg.

been used (Fig. 2). Initially, the cause of her problem was thought to be a primary infection of the tattoo but her condition did not improve despite treatment with antibiotics and antihistamines. In fact, it gradually worsened and finally resulted in an ulcer with purulent exudate *in situ*, which extended to the remaining area of the tattoo in the form of erythema and pruriginous eczema. Subsequently, the reaction also spread over the rest of her body, causing a generalized skin eruption with numerous eruptions in the lumbar area, dorsal area, arms and

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Fig. 2: Initial state of the allergic reaction with erythema and itchiness.

chest. Finally, a centralized skin ulcer appeared in the red-ink portion of the tattoo accompanied by loss of substance and necrosis (Fig. 3).



Fig. 3: Ulceration of the red-ink portion of the tattoo.

After the failure of the initial treatment with antibiotics and antihistamines, the decision was taken to surgically remove the affected area under spinal anaesthesia and then to cover the zone with an autograft. For this purpose, a debridement of the damaged skin was first performed followed by an autograft with skin obtained from the front part of the patient's right-thigh. During the surgery, it was observed that the most affected area, at the deepest layer of the skin ulcer, was where the red tattoo ink of the rose had been injected (Fig. 4).

A topical treatment consisting of an antiseptic antibacterial agent (chlorhexidine) was applied at the donor site. Silver sulfadiazine with vaseline® gauze dressing and tulgrasum®



Fig. 4: Autograft after the surgical excision of the tattoo.

(bacitracin zinc, neomycin sulfate and polymyxin B sulfate) were applied to the skin-graft area. The patient was also instructed to begin walking as soon as possible with intermittent periods of rest.

At the end of three weeks, the donor site was completely epithelialized and the skin-graft area revealed partial epithelialization (Fig. 5). After various months, the favourable evolution of the epithelium in the skin-graft site was confirmed (Fig. 6).



Fig. 5: Evolution of the epithelialization of the autograft site.



Fig. 6: Epithelialized autograft site.

## DISCUSSION

The patient suffered from allergic contact dermatitis which was the manifestation of an allergic response to the red pigment of a tattoo, complicated with ulceration of the skin. There are numerous studies that document allergic reactions to tattoo pigments though the most commonly reported are to red tattoo inks because of the substances that they contain [eg mercury sulfide and cadmium selenide] (6–7). Lichenoid and granulomatous reactions are the most frequent complications arising from red-ink tattoos (8). Although in medical literature, many cases of red-ink allergy have been documented, it is rare that surgical excision be required to finally resolve the problem (9–10).

Surgical excision as a remedy for allergic reactions to tattoo ink, which do not respond to conventional treatment, is

a viable solution. The results are most satisfactory when the surgical intervention takes place in the early-stages of the condition. In the case study reported, if the surgery had been performed earlier, the patient would have suffered the signs and symptoms of her condition over a shorter period of time. Furthermore, the recipient site of the skin-graft would have been smaller and the onlay of the graft more satisfactory with a smaller scar.

## AUTHORS' NOTE

All authors had full access to all study data, take full responsibility for the accuracy of the data analysis, and have authority over manuscript preparation and decisions to submit the manuscript for publication. We declare that we are not aware that any of the authors' academic institutions or employers has any financial interest in or a financial conflict with the subject matter or materials discussed in this manuscript and it is not currently under consideration elsewhere.

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