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Scarring after chemical tattoo removal: a retrospective study

The prevalence of tattoos has greatly increased. In Europe, 15% to 25% of the 25-34-year-aged population has tattoos [1]. A recent study showed that 14.4% of participants regret a current tattoo [2]. Thus, the tattoo removal market is constantly flourishing. Laser removal by a Q-switched laser is the gold standard [3].

Chemical tattoo removal is an old procedure, reported in 1888. The process involves performing punctuations

through the tattooed skin prior to application of a corrosive solution. A scab subsequently forms containing the dissolved pigments, which then falls off, taking away the colour. Many commercial products based on this concept have been and are widely available through the internet. Most use lactic acid as an active compound (Tattoo2away®, Dermapen®, Kataderm®, Skinial®). However, manufacturers do not provide the exact composition. These products are injected into the dermis using microneedles (Tattoo2away®, Dermapen®, and Rejuvi®) or applied on the skin after scratching the skin surface with a micropigmentation device (Skinial®). Chemical tattoo removal is popular because it is readily available in tattoo shops or aesthetic centres and deemed to be faster, cheaper and safer than lasers. However, the side effects are rarely reported.

We performed a retrospective study from 2019 to 2020. A standardized case report form was sent to the members of the French Society of Lasers in Dermatology. All participants had strong expertise in the management of tattoos by lasers. The inclusion criterion was a history of scarring, defined as permanent abnormal skin texture and/or colour, following chemical tattoo removal. The results are summarized in *supplementary table 1*.

All patients were women. The average age was 35 years. Tattoo removal was often performed in aesthetic centres ($n=9$), almost exclusively with products containing lactic acid ($n=13$) including Skinial® ($n=7$), Dermapen® ($n=1$) and an unspecified brand ($n=5$). Hypertrophic scars were the most frequent ($n=7$; 50%) (*figure 1A*), followed by atrophic

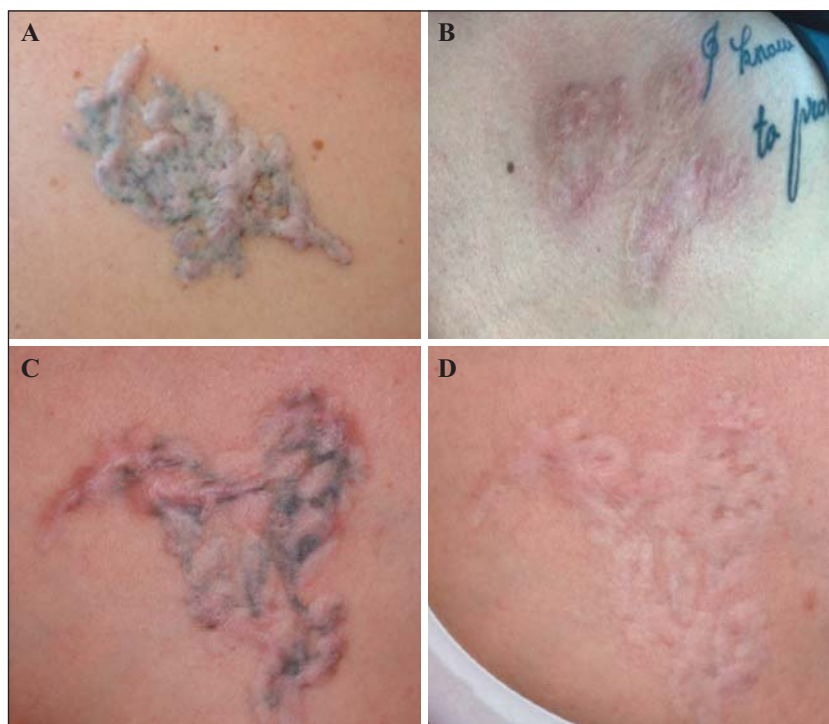


Figure 1. Scarring induced by chemical tattoo removal. **A)** Hypertrophic scar. **B)** Atrophic scar. **C)** Hypertrophic scar with remnants of pigment, before laser treatment. **D)** Same scar as in (C) after two sessions of fractional ablative laser and Q-switched 1064-nm laser.

scars ($n=6$; 42%) (figure 1B). The scars were associated with additional complications (supplementary table 1). In eight cases, the appearance of the scars was worsened by remnants of pigment (figure 1C).

Ten patients underwent corrective laser treatment. Most patients were treated with a 1064 Nd-Yag Q-switched laser ($n=7$); alone ($n=4$) or combined with a fractional non-ablative laser ($n=2$) or pulsed dye laser ($n=1$). The other patients were treated with a fractional ablative laser ($n=2$) or non-ablative laser ($n=1$). The results revealed “moderate improvement” ($n=4$) (figure 1D), “mild improvement” ($n=3$) and “no improvement” ($n=1$). Three patients could not be evaluated.

A substantial portion of tattoo removal is probably performed outside laser centres using chemical methods. Google Trends shows that people searching for “tattoo removal” also tend to search for “tattoo cream removal”. However, the side effects of these procedures are seldom reported [5]. We found that all patients seeking corrective treatment for scars occurring after chemical tattoo removal were young women. Scars were complex, involving both skin texture (hypertrophic/atrophic) and skin colour (depigmentation/remnants of tattoo pigments), resulting in severe aesthetic impairment.

We report, for the first time, several cases of scarring after tattoo removal with Skinial®, a widely performed method, with more than 200 Skinial® studios available worldwide [4], including a large majority in Europe. The side effects of Skinial® appear to be as severe as for the other brands incriminated previously [4], although the product is not injected. Finally, we found that correction of the scars induced by chemical tattoo removal was very difficult. However, treatment by an expert laser surgeon can improve the scar colour and texture.

The main limitation of this study is the lack of data regarding the percentage of people seeking tattoo removal who attempt removal by chemical means and the incidence of side effects of this practice. Such events seem to be clearly underestimated, as not all patients with scars after chemical tattoo removal may consult a physician. Additional studies are needed to clarify these issues.

In conclusion, chemical tattoo removal can be tempting, since it is deemed cheaper than laser tattoo removal, is widely advertised and is easily accessible. Nevertheless, it can induce irreversible scars in young people. Unfortunately, to date, it is poorly regulated or unregulated by law. Dermatologists can play a role in prevention by explaining the risks of this method to patients considering tattoo removal. ■

Supplementary data

Supplementary data associated with this article can be found, in the online version, at doi:10.1684/ejd.2022.4205. Table S1. History, clinical observations, main findings and treatments in 14 patients with scars from chemical tattoo removal.

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Association between serum IgG and Henoch-Schönlein purpura with renal involvement in children: a cross-sectional study

Henoch-Schönlein purpura (HSP), also referred to as immunoglobulin A vasculitis (IgAV), is a common systemic vasculitis in children. The long-term prognosis of HSP is highly dependent on the severity of renal involvement, termed HSP nephritis (HSPN). Renal involvement affects about one third of patients with HSP in the literature, and 1-2% developing end-stage renal disease [1, 2]. Therefore, it is important to determine risk factors for HSP nephritis. A previous study revealed that IgG co-deposition with IgA was an unfavourable prognostic factor for immunoglobulin A nephropathy (IgAN) after renal allograft [3], indicating the IgG co-deposition with IgA associated with HSP nephritis in children. Moreover, serum levels of IgA1 and IgG circulating complexes remarkably correlated with the severity of mouse glomerular involvement [4]. However, a relationship between serum IgG and IgAV in children is still unclear.

A total of 351 paediatric patients with HSP were retrospectively analysed from January 1st, 2016 to October 31st, 2019 at the Affiliated Hospital of Guizhou Medical University. Clinical features and laboratory data were