

Treatment of idiopathic guttate hypomelanosis with a tattoo device versus a handheld needle



To the Editor: We were pleased to read the case report by Rambhia and Rambhia describing the use of a hypodermic needle dipped in 5-fluorouracil to treat a patient with idiopathic guttate hypomelanosis (IGH).¹ It is a simple and original solution to treat challenging dermatosis.

Drug delivery with tattoo devices² has similarities and differences with the manual technique proposed by these authors.

Tattoo devices use solid needles and the drug surrounds the external surface of the microneedles. The friction generated by the rapid penetration of these needles into the dermis creates shear stress and a turbulent whirling of the drug that increases its dermal diffusion.³ Therefore, when choosing to use a handheld hollow hypodermic needle or a tattoo machine to treat IGH, physicians should be aware that these interventions produce different drug diffusion patterns in the dermis. The differences in diffusion between the 2 techniques in our model using black ink can be seen in Fig 1. Second, physicians should also consider that the use of a

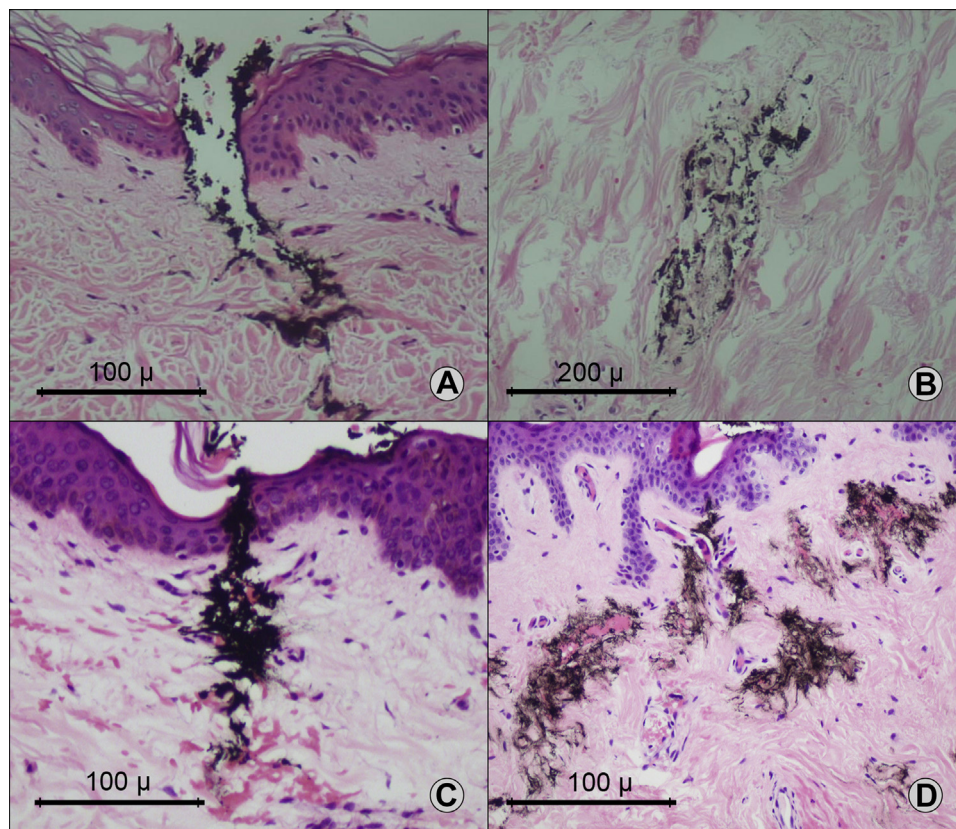


Fig 1. Diffusion patterns of black ink injected in the dermis using a handheld needle and a tattoo machine. Biopsies were taken immediately after dermopigmentation procedures. Procedure was done on a human skin fragment from abdominoplasty. Hematoxylin and eosin staining was performed. **A** and **B** represent longitudinal and transverse sections, respectively, of skin tattooed using a handheld hollow needle dipped in black ink. In the transverse section (**B**), notice pigmented area adjacent to the needle in the transverse section. **C** and **D** represent longitudinal and transverse sections, respectively, of the skin tattooed with a tattoo machine. In the transverse section (**D**), notice that the extensive pigment diffusion are larger with the handheld needle.

handheld needle to manually puncture individual lesions is undeniably slower, especially if this needs to be repeated in dozens of IGH lesions, and operator exhaustion may compromise the effectiveness of this procedure. The third difference is that drug delivery using a tattoo device in small areas does not require the use of local anesthesia, contrary to manual punctures. The fourth important difference between the 2 interventions is the reproducibility and precision of microneedling using tattoo machines. We recommend a microneedling protocol using a speed of 60-120 Hz, 570 perforations/cm², and a needle depth of 300 microns.⁴ The endpoint of the procedure is the appearance of uniform hemorrhagic spots, indicating that the drug has reached the dermis. As with the technique proposed by Rambhia and Rambhia, drug delivery with tattoo machines is likely safe, probably due to the injection of 5-fluorouracil at very low densities,⁴ which is well below the maximum recommended doses. The use of the microneedling technique using a tattoo machine under surgical aseptic conditions may also minimize the adverse effects reported in other tattooing procedures.⁵

Finally, we would also like to point out that tattoo machines are not high-end or complex equipment but are simple devices developed many decades ago and can easily be purchased at a relatively low cost. Moreover, the efficacy of drug delivery with tattoo machines does not depend on the use of a specific tattoo machine model.

We hope that our comments contribute to the development of effective treatments for IGH.

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(Sociedade Brasileira de Dermatologia, regional de São Paulo). Traderm is a company that commercializes tattoo supplies.

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Conflicts of interest

Dr. Samir Arbache, a dermatologist certified by the Brazilian Society of Dermatology, is the owner of Traderm, a company that commercializes medical and tattoo supplies for dermatologists and promotes medical education. Dr. Samia Trigo Arbache, a dermatologist certified by the Brazilian Society of Dermatology, is the daughter of Dr. Samir Arbache. Drs. Marcio Teixeira de Mendonça and Sergio Henrique Hirata have no conflicts of interest to report. Traderm is a profit-oriented company that sells tattoo machines and the accompanying cartridges for use by medical doctors. Dr. Samir Arbache is also the owner of a medical education company. Tattooing is an ancient technique conducted under public domain mainly performed by tattoo artists. We have copyrights to the acronym MMP® in Brazil, the United States, and Europe and grant free use of tattoo machines and cartridges exclusively to dermatologists who are members of the Brazilian Society of Dermatology and equivalent entities around the world. Dr Arbache's commercial involvement in this investigation was required in order to obtain approval for the medical use of equipment under the Brazilian health legislation (as enforced by Agência Nacional de Vigilância Sanitária) and to have this study submitted to the IRB. We would like to state that the clinical results described and documented herein can be achieved using any available tattoo machine. Dr Arbache is part of a team that trains Brazilian dermatologists in the use of this technique. See additional information in the attached conflict of interest form.

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