

prominence and was forced to withdraw; however, the patient improved with topical tretinoin. The second patient developed less severe tram trek scarring over the forehead and completed the study.

It is possible that the “tram trek” scarring may be a result of excessive force during the microneedling procedure over bony prominences of the patient’s faces.

42.3.6 POST-INFLAMMATORY HYPERPIGMENTATION

Postinflammatory hyperpigmentation (PIH) is a hypermelanosis resulting from dermal inflammation or injury, most commonly in people of color (Davis and Callender 2010). The inflammation may be endogenous in the case of primary dermatoses or exogenous from external insults like trauma or physical injury (Epstein 1989). While the pathogenesis is not completely known, PIH is believed to result from increased production of melanin or increased release of melanin due to melanocyte-stimulating signals such as cytokines and various other inflammatory mediators (Davis and Callender 2010).

Dogra et al. (2014) found 5/36 patients to present with PIH following two to three treatments of MN therapy for post-acne scarring. Of the five patients, three had severe hyperpigmentation forcing them to withdraw from the study, while the other two gradually improved with photoprotection.

Sharad (2011) and Majid (2009) reported more transient PIH in 4/36 patients and 1/37 patients, respectively, in similar studies on MN therapy using a Dermaroller (192 fine microneedles, 1.5 mm in length and 0.25 mm in diameter) for atrophic scarring. Each previously mentioned case of hyperpigmentation featured Fitzpatrick type III or greater skin, except for one patient of unspecified type. To date, the amount of adverse hyperpigmentation reactions remain minimal and are possibly a result of improper ultraviolet (UV) protection following the procedure (Ramaut et al. 2018).

As in other skin resurfacing skin techniques, microneedling PIH is seen more commonly in skin of color. However, the risk of hyperpigmentation is thought to be lower when compared to other dermabrasive techniques such as chemical peels and lasers (Cohen and Elbuluk 2016). We strongly recommend the use of test spots, postprocedural use of at least SPF 30 sunscreen, and avoidance of UV exposure both prior and after MN therapy to minimize the chance of posttherapy dyspigmentation. Please see Cohen and Elbuluk (2016) for an in-depth review of the uses and efficacy of MNs in skin of color.

42.3.7 OTHER ADVERSE EFFECTS TO CONSIDER

Lastly, other potential reactions of which MN users should be aware include photoirritation, photoallergy, nonimmunologic contact urticaria (NICU), and immunologic contact urticaria (ICU).

Phototoxic or photoirritant reactions are evoked from the combination of an exogenous or endogenous compound and UV irradiation (Ibbotson 2014). Phototoxic reactions most often appear similar to an acute sunburn; however, they occasionally present with urticarial, eczematous, lichenoid, or, rarely, pigmentary changes (Maibach and Honari 2014). In contrast, photoallergy requires a prior sensitization to the chemical in the presence of UV radiation and an additional exposure in which there is a cell-mediated immune response and clinical presentation of the photoallergy (Ibbotson 2014). Photoallergic reactions most often present with eczematous-like changes (Maibach and Honari 2014).

Contact urticaria comprises a group of inflammatory reactions ranging from itching, burning, and tingling to systemic anaphylaxis (Gimenez-Arnau and Maibach 2014). Contact urticaria can be divided into NICU and ICU, with the two separate entities distinguished by immunologic memory in the case of ICU, but no required prior sensitization in NICU (Gimenez-Arnau and Maibach 2014). ICU and NICU are distinct in mechanism and etiology, but have very subtle, if any, difference in their clinical presentation (Gimenez-Arnau and Maibach 2014; Lahti 2000).

There is little to no current literature documenting photoirritation, photoallergy, NICU, or ICU resulting from MN therapy; however, we believe they are important conditions of which to be aware with the potential growth of MN use in the future.