Skin Needling from Environ's Point of View - by Dr Des

Question:
I have been asked whether cosmetic needling ruins the acid mantle - thereby causing extreme dryness to the skin, resulting in an unhealthy skin.

This has been mentioned at another training course, and therefore it would be good to have an argument towards this statement.

Answer:
When we do Cosmetic Needling (or for that fact, medical or surgical needling, we automatically interfere with the water-proofing barrier of the skin. Simply put we have created channels from the moist inside through the dry barrier layer to the atmosphere and the trans epidermal water loss will be dramatically increased.

Lets deal only with cosmetic needling. Everyone except Environ, insists that needling should be 0.2 to 0.5 mm and many even claim that the deeper the better. The only barrier to consider is the waterproofing barrier of the stratum corneum which is 0.01 - 0.02 mm thick. The acid mantle is not part of the waterproofing except that a fine layer of fatty acids do give some but minimal occlusion.

I believe that 0.1 mm needles are the best length to use because usually they almost cannot be felt as pricks and the holes are according to our own research only through the stratum corneum and barely impact on the stratum granulosum. Since the stratum corneum is the only barrier to penetration of water-soluble ingredients, the moment one has breached the stratum corneum the skin is open and water soluble molecules easily move through the epidermis. The more holes one makes the greater the effect. The less you feel the more you can needle and the more holes you will make. There is relatively minimal difference between penetration enhancement if one uses a 0.1 mm needle or a 0.2 mm needle and also 0.3 mm. However the 0.2 mm needle length now penetrates into the area of epidermis where one can feel the pricks and 0.3 definitely lets you feel the pricks of each needle. The result is that at 0.3 or anything greater, only masochists can intensively needle their faces and if they do so then they will be redder and look irritated with little benefit in penetration enhancement. [1] In general we can be sure that most people will not needle as intensively when they can feel pricking. As a result they don't make many holes and so there will not be significant penetration enhancement.

Lets consider trans epidermal water loss: We need to know how long do these channels remain open. Some people say as little as 1 hour but with

longer needles over 3.7 mm the closure time increased to up to 18 hours [2] or up to 72 hours [3].

By making shorter holes only through the stratum corneum the holes close quicker and there is less drying of the skin while we have not sacrificed anything as far as penetration enhancement. The skin doesn't look irritated, pink or feel sensitive and one can safely and effectively needle every day or even twice a day.

Environ is the only company using 0.1 mm and research shows that 0.15 is as effective as other depths without irritation. [4] While we say that our needles are 0.1 mm in fact we have a tolerance up to 0.15. Clinical evidence demonstrates that 0.1 mm works extremely well with minimal side effects and shorter time of trans epidermal water loss. So, yes, after cosmetic needling there is interference with water barrier function but it is of shorter duration when 0.1 mm needles are used and skin remains healthier.

Kind regards
Des

1. Bal, S.M., et al., In vivo assessment of safety of microneedle arrays in human skin. Eur J Pharm Sci, 2008. 35(3): p. 193-202.
2. Kalluri, H., C.S. Kolli, and A.K. Banga, Characterization of microchannels created by metal microneedles: formation and closure. AAPS J, 2011. 13(3): p. 473-81.
3. Han, T.Y., et al., Facial skin barrier function recovery after microneedle transdermal delivery treatment. Dermatol Surg, 2012. 38(11): p. 1816-22.
4. Badran, M.M., J. Kuntsche, and A. Fahr, Skin penetration enhancement by a microneedle device (Dermaroller) in vitro: dependency on needle size and applied formulation. Eur J Pharm Sci, 2009. 36(4-5): p. 511-23.