Pore reduction without petechiae using picosecond laser systems

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The picosecond laser currently used in clinical settings has lower energy and longer pulse duration for inducing plasma. However, using a convex lens to focus the laser beam can increase the energy to create plasma and make shockwaves. Using picosecond lasers and lenses can promote the generation of collagen and elastic fibers within the dermis without damaging the overlying epidermis by inducing laser-induced optical breakdown (LIOB) or laser-induced cavitation (LIC).

Fractional picosecond lasers could be more effective and safer for treating pores than conventional fractional Er:glass lasers, especially for dark-skinned people. Petechia is inevitable when high fluence fractional picosecond laser treatment for scar or rejuvenation. Pinpoint bleeding could spontaneously disappear within several days after laser treatment. However, it might exacerbate existing melasma or cause post-inflammatory hyperpigmentation. Therefore, avoiding petechia is recommended when treating pores with pigmented lesions like melasma or dark-colored skin.

The use of lower fluence of picosecond laser is necessary to prevent petechia. In the case of picosecond lasers, lower fluence results in deeper penetration into the dermis. However, the photomechanical effect becomes weaker, leading to the formation of LIC or only the denaturation of collagen rather than LIOB. However, the shorter pulse duration of picosecond laser beam is preferable to create shockwaves more easily. Therefore, a fractional picosecond laser system with lower fluence and shorter pulse duration is needed to create more shockwaves while avoiding pinpoint bleeding for treating pores with pigmented lesions.

In pore treatment, the entire face needs to treat, and focal extensive collagen regeneration is unnecessary, unlike scar treatment. Therefore, We use a 250ps 1064nm Nd:YAG laser system using an MLA handpiece with lower fluence for treating pores with pigmented lesions such as melasma, avoiding petechia.

References

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