

Percutaneous Collagen Induction (microneedling) in non-atrophic scar management: literature review

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Abstract

Follicular Unit Extraction technique also commonly known as FUE Introduction Percutaneous collagen induction (PCI) or needling techniques are increasingly popular in aesthetic practice. The underlying mechanisms of action rest on producing a pattern of non-ablative and non-confluent puncture wound pattern to the dermis with a resulting regenerative effect on the skin. The majority of publications in the scar literature focus on the use of PCI in the context of atrophic scars with no currently available summative reports appraising the pertinent evidence relevant to non-atrophic scars.

Methods A detailed English literature review was conducted using PubMed Medline, Embase and Web of Science; the manuscripts were appraised and classified according to the Joanna Briggs Institute Levels of Evidence. Results are presented in descending order of evidence.

Discussion On the basis of level 1 evidence currently available, the combination of needling and silicone gel can improve the short-term pliability, height and vascularity of hypertrophic and keloid scars. According to level 2 evidence, needling alongside spray keratinocytes can produce a statistically significant improvement to patient/observer scar ratings and improve pigmentation in hypopigmented burn scars at 12-month follow up. Results from mixed cohort studies also point towards needling having a beneficial effect on fat graft retention. Level 3 data suggest that needling can render significant resurfacing effects to both mature and actively hypertrophic burn scars at 12-month follow up based on objective scar scales; furthermore, favourable histological changes are seen including better collagen alignment in the dermis and thicker epidermal layer. A number of level 4 studies reinforce the promising role of needling in the resurfacing of both mature and actively hypertrophic scars.

Conclusion Needling techniques are promising adjuncts to non-atrophic scar management. Further research with long-term follow up and comparative design protocols incorporating other resurfacing modalities is warranted before the exact value of needling is delineated in scar management protocols.

Biography

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Recent Publications

1. Fabbrocini, G., Marasca, C., Ammad, S., Brazzini, B., Izzo, R., Donnarumma, M. and Monfrecola, G. (2016). Assessment of the Combined Efficacy of Needling and the Use of Silicone Gel in the Treatment of C-Section and Other Surgical Hypertrophic Scars and Keloids. *Advances in Skin & Wound Care*, 29(9), pp.408-411.
2. Busch, K., Bender, R., Walezko, N., Aziz, H., Altintas, M. and Aust, M. (2016). Combination of medical needling and non-cultured autologous skin cell transplantation (ReNovaCell) for repigmentation of hypopigmented burn scars. *Burns*, 42(7), pp.1556-1566.

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