

Radiofrequency Rejuvenation of the “Tweeners” Patient: Under, Over, or Through the Skin

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Background

The demand for noninvasive facial rejuvenation continues to increase as younger, well-informed patients enter the aesthetic market. We refer to a subset of these patients as “tweeners,” those who present with early signs of neck and facial aging, but who have not yet developed changes significant enough to warrant a traditional excisional surgery approach. Many of these patients are in search of a minimally invasive intervention, a bridge in between observation and surgery. The authors describe their experience with radiofrequency (RF) technology as an in-office tool to address the aging face in select patient population. This review also attempts to comprehensively search the existing body of literature to describe the RF technologies and devices available for facial rejuvenation. The efficacy and safety profiles of the devices are discussed, and the devices are categorized by their method of RF delivery – over (contact), through (microneedle), and under (percutaneous) the skin.

Methods

Over the Skin (Contact):

Contact RF technologies deliver energy over the epidermis, to heat the dermis. The threshold temperature for an epidermal burn is 44 to 48C, which is significantly lower than the optimal temperature for dermal collagen contraction (60-65C). To deliver electrothermal energy to a therapeutic depth while mitigating the risk of epidermal burn, aggressive skin cooling and multiple short duration treatments are required. The practitioner must balance the power and heat generated by the device to produce a result with a constant concern that heating the epidermis too much will create a burn.

Through (Microneedle):

Transcutaneous (or microneedle) RF technologies deliver energy through the skin, into the dermis. This technology consists of a fractionated tip or array of

needles with parallel rows of bipolar electrodes that are inserted through the skin. Many varieties of microneedles exist, and the characteristics of the needles can improve or limit RF penetration to the target tissue. Needle length may be variable or fixed. Temperature monitoring allows for feedback to the handpiece and can help to limit epidermal injury by shutting off the RF component at surface temperatures near 44C.

Under (Percutaneous):

Percutaneous RF technologies deliver energy into the subdermis, simultaneously melting subcutaneous fat and tightening both the fibroseptal network below and the overlying skin, while completely avoiding the epidermis. Only two percutaneous devices have U.S. FDA approval for the treatment of face and neck: FaceTite (InMode Corporation, Toronto, Canada) and Thermitight (ThermiAesthetics, Southlake, TX), while BodyTite (Invasix, Ltd, Yokneam, Israel) is a larger, more powerful version of the FaceTite, designed for use in other areas of the body.

Conclusion

While there is a considerable amount of literature on RF technology and devices in the treatment of the aging face, there are also limitations. Many publications are limited to single device descriptions, experiential findings by the author, subjective outcome measures, and different follow-up durations. There are relatively few prospective trials and reviews, and further studies are needed to compare RF technology and devices. This review attempts to comprehensively search the existing body of literature to describe the RF technologies and devices available, including their efficacy and safety profiles, for facial rejuvenation. This review organizes the devices by their method of RF delivery – over (contact), through (microneedle), and under (percutaneous) the skin.