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Radiofrequency in Cosmetic Dermatology

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Radiofrequency (RF) current is an electrical current, typically with a frequency in the megahertz range. RF has been known to medicine since the late 19th century; however, the usage of RF in cosmetic and aesthetic medicine started only less than two decades ago.

The basic idea behind using RF on the skin is its ability to deliver heat to depth. Lasers and light sources are also able to generate heat, but their energy is absorbed in a chromophore-specific manner (the theory of ‘selective photothermolysis’). RF electrical conductivity creates heat in the tissue based on the properties of the tissue itself (like the skin temperature and water content) and is not dependent on specific chromophores.

Today, RF current can be applied to the skin in various ways: unipolar or monopolar, bipolar, ‘multipolar’ (multiplication of bipolar) and combinations of RF and light, ultrasound, magnetic field, vacuum, etc., all of them commonly used for tissue heating and tightening.

Recently, after the introduction of fractional photothermolysis, which applies light-based techniques that enable the formation of an array of microscopic thermal ablated or coagulated wounds in the skin to induce a therapeutic healing response throughout the skin layers, several fractional RF devices have joined this armamentarium. These devices can be divided into superficial ablation systems and minimally invasive (microneedling RF) systems.

The aim of this book is to introduce to the reader the variety of RF techniques currently available on the market and to evaluate the efficacy and safety of typical RF devices in rejuvenating the skin, in improving the signs of facial aging, and providing skin tightening, to better understand and to support informed decisions in choosing the right treatment options for us and for our patients.

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