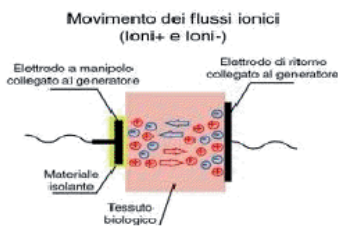


Neocollagenesis and Skin Tightening by Forma™ Bipolar Pulsed RF

Dr. E. Krieger, University of Ferrara - Italy

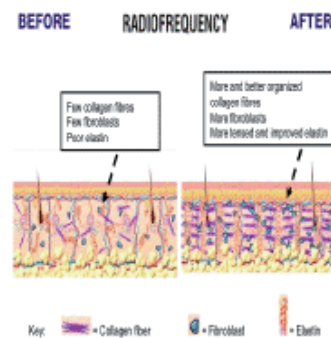
Background: Radiofrequencies are commonly used in medicine since the very beginning of the 20th century. In the year 1907 Nagelschmidt coined the term Diathermy to indicate the heating of living tissue produced by the conversion of high frequency currents in heat without being accompanied by painful muscle contraction that occurs while inducing low frequencies currents.



The electromagnetic endogenous heating has some advantages over other forms of tissue heating (conduction, infrared radiation, etc.) In particular long waves allow heating of deeper layers. While during heating by conduction, the temperature decays exponentially to the physiological value (37°) in few millimeters, electromagnetic heating allows more homogenous distribution of temperature in few centimeters depths, which cannot be reached with other external means. Radiofrequency in aesthetic medicine applications, targets the reticular dermis matrix, aiming to increase the intra-dermal temperature in order to obtain two different physiological effects:

1. A short term effect, so called "BBQ Effect" or "Shrinking Effect": an immediate contraction of the existence collagen fibers and initial protein denaturation induced by heat, which reacts by a reorganization of the tridimensional protein structure. This reaction generates a perceptible skin toning and a quite visible transitional but visible facial lift-up.

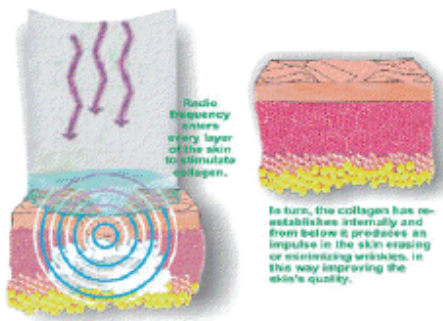
2. A long lasting effect, due to continuous denaturation process (5% - 30% of total collagen fibers in the treated area) and the formation of a damaged area with an inflammatory component that induce finally a reparative response. The flogistic stimulation select some important fibroblast's subpopulations that have an important role in fibrosis formation; Interleukin IL-4 bond to CD-40 of fibroblasts with pro-fibrotic reaction and stimulation of production new collagen.



The physical law that is the basis for the physiological effect of the RF, is given through the modification of electrical camp in the treated area, the changing of polarity and the fluency of ions and molecules, which determine heat according the following formula: $J = I \times R \times T$ (J = energy, I = current, R = tissue impedance, T = time) Generally the heat produced is developed gradually in 3mm to 9 mm depth and determines heating up to 55°C – 65 °C. Forma™ ST applicator is a bipolar pulsed radiofrequency with cooling system of the electrodes , able to deliver up to 100 J/cm³ in less than 200 ms. This fractional mode of energy delivery, generate an immediate peak of about 60°C within the dermis layer. This results as a firmly effective stimulation for the consequent reparative desired response.

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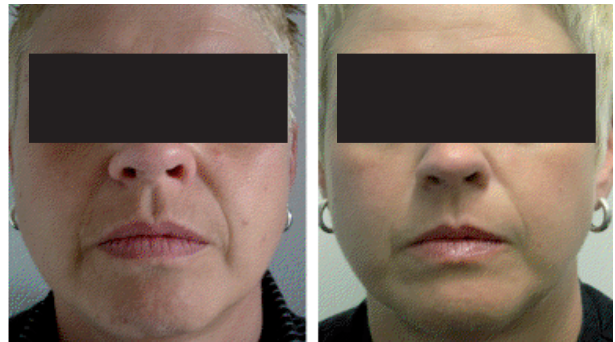
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Objective: morphological evaluation of physiological reaction and modification of skin texture, tone and elasticity within the naso-labial folds. Using ST applicator of Forma™ system (by Formatk Ltd. Israel)

Method: a light dermal – abrasion, using Forma's diamond peeling was performed prior to the RF session in order to reduce the skin impedance and improve the ST applicator – skin coupling. Abundant RF gel (Parker 03) layer was then applied along the fold area. 4 double passages were performed, starting with 65 J/cm^3 , pointing the electrodes in-between the fold line, having $\sim 0.5 \text{ cm}$ distance and emitting a pulse every two seconds. The backward passage involved the electrodes perpendicularly to the fold line. Energy rate was increased on the next 3 passages of 5 J/cm^3 each and the last one was set on 80 J/cm^3 . Close-up pictures were taken prior to the treatment and 3 weeks later.

Case: 42 Y/O female volunteer with fairly marked naso-labial folds (Dx, Sn). The treatment evoked an immediate hyperemia and edema. A moderate perception of pain was accompanied while using high energy delivery (80 J/cm^3)



Results: a significant improvement was observed three weeks after the treatment in terms of skin texture and fold depth.

Conclusion: ST pulsed RF by Formatk is a safe, clinically proven way to tighten and contour skin, with improvements in tone, contour, and texture occurring naturally through stimulation of your own collagen.