

TECHNOLOGY UPDATE

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Infini: A New Way to Tighten Skin Using Radiofrequency Needles

[E. Victor Ross, MD](#)

Many skin-tightening devices have been introduced over the past 12 years. The original monopolar radiofrequency (RF) device used a multiple-pass technique (but not a moving technique) and has evolved and continued to improve. Other technologies introduced for skin tightening over the past 10 years include halogen lamps and long-pulsed Nd:YAG lasers. Roving RF devices, which require movement of an applicator back and forth across the skin, have been applied to faces, necks, abdomens, arms, and legs with variable and somewhat unpredictable results. All of these technologies raise the temperature of the dermis and/or fat over a relatively large volume. Application times can range from milliseconds to minutes.



Fig. 1 A-B

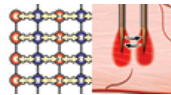


Fig. 2

More recently, fractional ultrasound and RF devices have been applied to produce focal lesions in the dermis and subcutaneous regions. The premise is that high-intensity, small-volume, discrete lesions are preferable to lower-intensity, large-volume injuries.

One novel device is the Infiniti platform from Lutronic (Fremont, CA). This is an RF needle-based device that inserts 49 (or 16, depending on the tip used) needles into the skin from the surface through a spring mechanism (Fig. 1). The needles are insulated, with the exception of the 300 µm tip. A delay between the initial implantation and the application of RF energy ensures that the energy will only be delivered at the deepest regions of the needle insertion. The needle depth is chosen by the operator and ranges from 0.25 to 3.5 mm. The other parameters are *power* (chosen as a level from 0 to 20, where level 20 represents about 50 W) and the *on time* of the RF energy during the needle insertion (which varies from 50 to 1000 ms). Multiple passes can be delivered, normally from top to bottom, creating latticeworks of focal injuries in different Z planes. Fig. 2 illustrates how Infiniti microneedles work.

The setting configurations allow the operator to create customized injury patterns that optimize the outcome for particular patient presentations. For example, acne scarring over thick skin can be treated at a 3.5 mm depth on the first pass, 2.5 mm on the second pass, and perhaps 1.25 mm on the third pass. On the other hand, thinner skin on the neck can be treated with a series of passes at 2.5, 1.5, and 1 mm depths for fine lines, whereas deeper tightening in the submental area can be carried out with settings similar to those applied to thin-skinned, acne-scarred areas. The chest, neck, and extremities can be tightened with a series of passes with this novel device.

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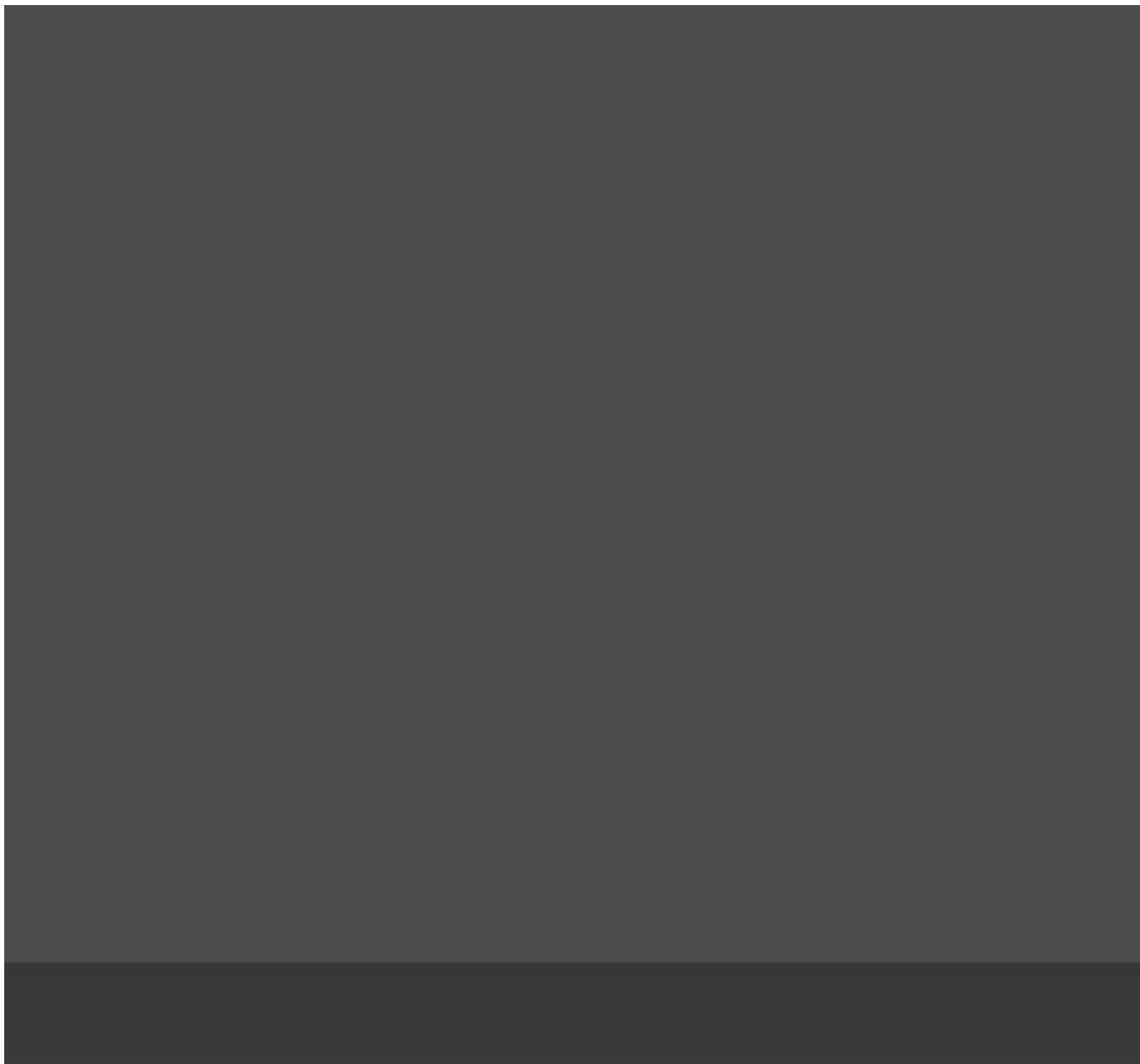
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