

## Surgical Pearls

# Percutaneous Radiofrequency Lower Face and Neck Tightening Technique

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**Percutaneous radiofrequency (RF) technologies** have recently been introduced to deliver electrothermal energy into the hypodermal skin layers, which have been inconsistently accessible by previous RF devices.<sup>1</sup> The hypodermis contains a complex collagen network involving the papillary and reticular dermis, fibrofatty septae, and underlying fascia. These deeper tissue layers act in concert with the more superficial dermal skin layers to create the



Author Video Interview



Video

skin's tone, quality, and durability. Energy delivery at these depths not only contributes to skin tightening and wrinkle reduction but also ablates subcutaneous fat and increases skin elasticity by remodeling its anchoring mechanism to the deeper fascia and muscle.<sup>1</sup> In this setting, percutaneous RF technologies can effectively treat skin and soft-tissue ptosis, ablate subcutaneous fat deposits, and reduce jowling along the mandibular border and cervical platysmal banding.<sup>2,3</sup>

Currently, the only 2 percutaneous RF devices that have been cleared by the US Food and Drug Administration for face and neck treatment are ThermiTight (ThermiAesthetics) and FaceTite (InMode).<sup>1,4,5</sup> The ThermiTight device incorporates either a 10- or 15-cm long and 1.3-mm diameter monopolar RF probe (Figure, A), while the FaceTite system uses a solid, insulated, 10-cm long and 1.3-mm diameter bipolar RF applicator probe with an external receiving electrode (Figure, B). In both systems, RF energy is emitted from the tip of the internal electrode, causing coagulative necrosis of the subdermal fat and thermal denaturation of the lower reticular dermis and the fibroseptal network.

## Surgical Technique

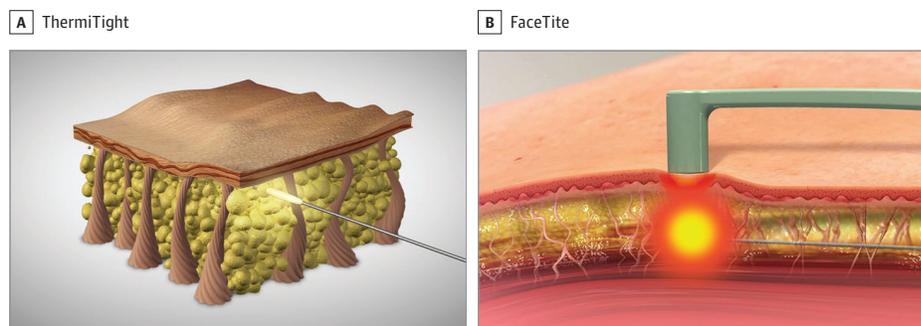
The patient is placed in a seated position with the lower face and neck exposed. Informed consent is obtained, and pretreatment photos are taken. A wheal of lidocaine, 1%, with epinephrine 1:100 000 is raised bilaterally underneath each earlobe and in the central submental crease. A 16-gauge needle is then used to

create 3 pilot hole openings in the skin at the site of prior lidocaine injection, piercing through the dermis and entering the subcutaneous tissue. Tumescent anesthesia (10 mL lidocaine, 1%; 1.5 mL sodium bicarbonate, 8.4%; and 0.4 mL epinephrine 1:1000 in 100 mL saline, 0.9%) is then introduced through the 3 previously made needle openings using a tumescent fluid infusion cannula. Typically, 80 to 100 mL of tumescent is used to treat the entire lower face and neck with approximately 20 mL injected per neck treatment area (eg, left neck, left jowl, right neck, right jowl, and central neck/submentum). The lower face and neck are then sterilely prepped and draped. This point in the procedure can be adjunctively used for microliposuction treatment, wherein a small liposuction cannula is used to remove additional neck fat and liposculpt the neck. A 2- to 3-mm liposuction cannula attached to a 20-mL syringe is used in our practice.

Once adequate anesthesia is obtained, the RF probe is inserted into the left infra-auricular pilot hole and advanced/rettracted subcutaneously at alternating angles to create subcutaneous tunnels through which the probe will travel when the RF energy is initiated. The RF probe is then inserted along the inferior mandibular border completely to its hub and the device energy is activated. The probe is withdrawn 1 cm at a time, delivering energy for approximately 5 seconds in each spot before being withdrawn each additional centimeter. Next, the probe is fanned across the left neck by inserting the probe and then applying the energy as the probe is continuously withdrawn. Once the left neck is completed, the left jowl area is next treated. It is important to apply the probe immediately subcutaneous in this area and not dive deeper into the jowl fat because the terminal branches of the marginal mandibular branch of the facial nerve are in close proximity. Once the left jowl area is completed, the right neck, right jowl, and central/submental areas are then treated in sequence.

Treatment time is usually approximately 7 to 10 minutes per lateral neck area, 1 to 2 minutes per jowl area, and 3 to 5 minutes in the central neck zone. That being said, it is temperature, not time, that

Figure. Schematics of Percutaneous Radiofrequency Device Functioning



A, A schematic of the ThermiTight system heating the fibroseptal network to obtain tissue tightening. Image used with permission from ThermiAesthetics. B, A look at the technology of the FaceTite device wherein the energy directionally flows from the deep subcutaneous probe to the surface pole. Image used with permission from InMode.

defines the treatment durations within each area. Temperature and impedance sensors are integrated within the handpiece and/or electrode, which sample the surrounding subdermal tissues up to 10 times per millisecond. Additionally, a FLIR thermal camera (FLIR Systems Inc) is used to monitor the skin temperatures and ensure that each treatment zone is heated to at least 42°C and staying below 48°C.

The techniques for ThermiTight (Video 1) and FaceTite are essentially the same, with the addition of ultrasound gel being applied to the skin when using the FaceTite device to reduce friction from the external receiving electrode (Video 2). Once the procedure is completed, the microliposuction cannula is used to aspirate any liquefied fat from the treatment areas because this can in-

crease postprocedure irritation and/or inflammation if left in situ. A single 6-0 fast-absorbing gut suture is used to close the port holes if liposuction was performed; otherwise, they allowed to heal by secondary intention. The patient is discharged with a neck compression garment to be worn for 24 to 48 hours, then nightly for 1 week. Postoperative appointments are made for 1 week, 1 month, 3 months, and 6 months, with final results achieved within 4 to 6 months.

### Conclusions

Percutaneous RF technologies are safe, minimally invasive, and effective for rejuvenation of the neck and lower face. Herein, we present our technique for using these technologies under tumescent anesthesia.

### ARTICLE INFORMATION

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