

Establishing the Safety and Efficacy of

Simultaneous Face Lift and Intraoperative Full

Face and Neck Fractional Carbon

Dioxide Resurfacing

Sir:

Current literature provides little support for combining rhytidectomy with full face carbon dioxide resurfacing, except in cases where extremely low laser settings are used in combination with deepplane rhytidectomy.^{1,2} We explored the possibility of combining recently developed fractional carbon dioxide resurfacing technology with standard rhytidectomy, and established the extent of skin flap elevation and laser settings for safe resurfacing during this procedure. The formulation of this study conforms to the principles detailed by the Declaration of Helsinki.

Simultaneous extended supraplatysmal rhytidectomy combined with full face and neck fractional carbon dioxide resurfacing was performed on 20 patients with an average age of 56 years (range, 46 to 72 years). Rhytidectomy was performed before resurfacing. Skin flaps were elevated to the level of the nasolabial fold and midline of the neck (Fig. 1, left). Resurfacing was performed using the Fraxel Re:Pair 10,600-nm fractional carbon dioxide laser (Solta Medical, Hayward, Calif.). Skin flaps were treated at 20 mJ with a spot density of 500 microthermal zones of ablation per square centimeter, with four alternating passes creating a uniform final density of 2000 microthermal zones of ablation per square centimeter. Nonundermined perioral, nasal, and forehead skin was resurfaced with four passes at 40 mJ and 500 microthermal zones of ablation per square centimeter (Fig. 1, left). Excess resurfaced skin was sent for histologic examination. Flexzan occlusive dressing (Bertek Pharmaceuticals, Inc., Morgantown W.Va.) was applied to the face and neck and removed 5 days postoperatively. Patients were seen at weekly follow-up for 2 months.



Fig. 1. (Left) Extent of skin undermining of the face and neck. (Right) Fractional carbon dioxide resurfacing settings. X, 20mJ and 20 percent coverage; O, 40mJ and 40 percent coverage.

There were no cases of delayed healing or other complications. Resurfaced skin reepithelialized within 7 days, and all patients were able to wear makeup 10 days postoperatively. Histologic examination of resected skin revealed cylindrical zones of ablation approximately 234 μm in width penetrating to a depth of approximately 445 μm (Table 1). Important differences between traditional carbon dioxide methods and newer techniques of fractional resurfacing made this combined procedure possible without associated delayed healing or loss in flap integrity. Traditional carbon dioxide lasers ablate 100 percent of the skin surface, directly penetrating less than 20 μm but inducing horizontal sheets of residual thermal damage that reach the cutaneous microvasculature, potentially causing flap failure after only one or two passes. In contrast, microthermal zones of ablation actually penetrate deeper (400 to 650 μm) into the dermal collagen but spare approximately 80 percent of tissue, thereby preserving a functional microvasculature that helps with healing and flap survival.³ In vivo experiments demonstrate rapid reepithelialization, followed by enduring dermal remodeling.⁴

Fractional laser technology also enables the treating physician to overcome limitations in cosmetic outcome that have prohibited past attempts to combine rhytidectomy with resurfacing. Traditional carbon dioxide using low-energy settings during rhytidectomy results in inferior resurfacing, and higher energy treatments of isolated areas such as the perioral region induce lines of demarcation between treated and untreated skin.⁵ Similarly, traditional carbon dioxide is not recommended for the neck because it creates a noticeable difference in quality between the resurfaced face and untreated neck. In contrast, fractional resurfacing allows the entire face and neck to be treated during rhytidectomy, imparting a youthful quality to the entirety of facial skin while avoiding lines of demarcation (Fig. 2). The patients in this study were very satisfied with their treatment outcomes and were pleased not to have to wait to undergo a second procedure with additional weeks of healing time.



Fig. 2. (*Left*) Preoperative photograph of a patient before extended supraplatysmal plane rhytidectomy combined with fractional carbon dioxide resurfacing of the entire face and neck. (*Right*) Patient's appearance 3 months after the combined procedures.