

Cool Atmospheric Plasma (J-Plasma) and New Options for Facial Contouring and Skin Rejuvenation of the Heavy Face and Neck

Richard D. Gentile, MD, MBA¹

¹ Medical Director, Facial Plastic and Aesthetic Laser Center, Youngstown, Ohio

Address for correspondence Richard D. Gentile, MD, MBA, Facial Plastic and Aesthetic Laser Center, 821 Kentwood Suite C, Youngstown, OH 44512 (e-mail: dr-gentile@msn.com).

Facial Plast Surg 2018;34:66–74.

Abstract

Keywords

- ▶ cool atmospheric plasma
- ▶ facial rejuvenation
- ▶ skin rejuvenation
- ▶ rhinophyma
- ▶ basal cell carcinoma

Treating patients with heavy or thick features comes with challenges not present in those patients lacking these physical characteristics. The authors report our experience with cool atmospheric plasma for facial contouring and skin rejuvenation of the heavy face and neck including rhinophyma. Cool atmospheric plasma is generated by running helium gas over radiofrequency energy. The resulting plasma is a fourth state of matter and has enhanced clinical effects for ablation and thinning of skin and soft tissues as well of contouring and tightening of deeper soft tissues and fascia. Cool helium plasma has been a very effective tool for skin rejuvenation and skin tightening as well as using it as a tool for nonexcisional microinvasive face and neck rejuvenation. Future research may indicate that it can help treat primary or recurrent superficial cutaneous malignancies.

Treating patients with heavy or thick features comes with some challenges not present in patients lacking such physical characteristics. Modifications of either skin thickness or facial and neck volume will require surgical techniques and/or technology-based devices that have the ability of fine-tuning skin thickness and overall facial and neck volume and mass. In assessing skin thickness, there can be a thinning of facial or neck skin due to eliminating redundancy or laxity of the skin or what is commonly termed “skin tightening.” Skin tightening occurs as an end result of the wound healing cascade that occurs with tissue injury whether the wounding occurs by surgical or thermal trauma. The endpoint of collagen contraction and skin tightening occurs in the last phase of wound healing as realignment of collagen bundles permits overall contraction of the soft tissue and skin mass to occur. Skin thickness in many patients is directly attributed to the degree and number of sebaceous units in the skin and this can also be modified by some types of energy-based devices. In contrast to superficial skin tightening, the overall volume of heavy face and neck patients tends to require a soft tissue reduction with significant sculpting and contouring. The soft tissue involved is mostly fat but can also be due to

volume changes in superficial or deep fascia and the volume of salivary glands and facial musculature, especially the digastric muscles in the neck. Laxity of neck musculature, especially the platysma, will also contribute to the overall volume of the neck and in some cases, require modifications in muscle anatomy via platysmaplasty to achieve the final aesthetic outcome of improved facial and neck contours. In this article, we will examine the ability of a new class of cold atmospheric plasma (CAP) devices to improve skin tightening of facial, nasal, and cervical skin—especially rhinophyma, and also evaluate the technology’s ability to offer neck and jaw contouring in a manner that is both efficacious and safe. We will also introduce evidence for potential applications for the treatment of cutaneous malignancies.

Historical Background of Plasma Technologies in Medicine and Surgery

Historically, plasmas were first employed in a “biological” application in the late 1850s when Siemens used a dielectric-barrier discharge (DBD) to generate ozone and used the ozone to clean water from biological contaminants. The

Issue Theme Managing the Thick Skin in Facial Plastic Surgery; Guest Editor, Roxana Cobo, MD

Copyright © 2018 by Thieme Medical Publishers, Inc., 333 Seventh Avenue, New York, NY 10001, USA.
Tel: +1(212) 584-4662.

DOI <https://doi.org/10.1055/s-0037-1621713>.
ISSN 0736-6825.

- *The Renuvion® APR Handpiece is intended for the delivery of radiofrequency energy and/or helium plasma where coagulation/contraction of soft tissue is needed. Soft tissue includes subcutaneous tissue.*
- *The Renuvion APR Handpiece is intended for the coagulation of subcutaneous soft tissues following liposuction for aesthetic body contouring.*
- *The Renuvion APR Handpiece is indicated for use in subcutaneous dermatological and aesthetic procedures to improve the appearance of lax (loose) skin in the neck and submental region.*
- *The Renuvion APR Handpiece is intended for the delivery of radiofrequency energy and/or helium plasma for cutting, coagulation and ablation of soft tissue during open surgical procedures.*
- *The Renuvion APR Handpiece is intended to be used with compatible electro-surgical generators owned by Apyx Medical.*