

Neck Skin Rejuvenation

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KEYWORDS

- CO₂ laser • Croton oil peel • Epidermal ablation • Laser resurfacing • Neck lines • Neck lift
- Photodamage • Postoperative wound care

KEY POINTS

- Laser rejuvenation of the neck with the ultrapulsed CO₂ laser provides improvement in tone and texture of treated skin and can be used safely as an adjunct to neck/facelift surgery.
- A novel post-treatment plan with perfluorodecalin emulsion greatly reduces adverse effects traditionally associated with fully ablative resurfacing.
- The croton oil peel technique can be modified (ie, by varying the concentration of croton oil) to affect the depth of penetration, providing unprecedented control of treatment depth and minimizing the likelihood of hypopigmentation.
- The risk of adverse effects during CO₂ laser resurfacing of the neck is reduced by adjusting the treatment parameters to accommodate the reduced healing capacity of the neck compared with the face.

INTRODUCTION

The aging neck is characterized by platysmal bands, lipodystrophy, and jowls that extend into the neck.¹ As jowls develop, the chin and jawline lose definition and horizontal and radial necklines become more noticeable.² Like the face, the neck is subject to photodamage.^{3,4} For these reasons, patients who seek facial rejuvenation often want their neck treated as well to obtain a homogenous, natural appearing improvement in photodamage.³ Surgical approaches to addressing these and related cervical deformities have been described.^{1,5} Nonsurgical modalities, such as botulinum toxins, chemical peels and dermabrasion, radiofrequency energy, plasma skin regeneration (PSR), lasers, and light,^{6,7} have also emerged to rejuvenate the skin of both face and neck. Resurfacing of the neck combined with facelift and other surgical procedures must be executed carefully and with significant caution due to the inherent healing limitations of the neck.

BOTULINUM TOXINS

Botulinum toxins have been used to treat vertical platysmal bands^{2,8-11} and horizontal neck rhytids.^{2,10,11} Results appear within several days and persist for up to 6 months.⁶ Potential complications are minimal but include dysphagia and immunoresistance, which may be avoided by using the smallest effective doses, injecting at intervals of at least 3 months, and avoiding booster injections.⁸ Careful injection technique is critical to avoid diffusion of toxin to nontargeted muscles near the injection site.¹⁰

Patients likely to benefit from botulinum toxins should have good cervical skin elasticity, well-defined platysmal bands, and minimal fat descent.¹⁰ The treatment is suitable for older patients who are either poor candidates for surgery or have already had neck rejuvenation surgery. Younger patients with strong platysmal bands that do not require surgery are also candidates.⁹ No improvement is expected, however, in the appearance of photodamaged skin.

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PEELS AND DERMABRASION

Although inexpensive, chemical peels and dermabrasion have produced variable results in photo-damaged facial skin due to the difficulty in controlling the depth of tissue removal.¹² In the neck, dermabrasion and chemical peels are associated with a high risk of scarring,¹³ although this risk may be smaller with superficial peels.⁶ Roy⁶ uses α - and β -hydroxy acid peels to treat vascular and pigmented lesions and fine rhytids on the neck and chest because these peels can be used on all types of skin and there is no downtime. Roy cautions, however, that results are less dramatic than with light and laser treatments. When resurfacing the face with medium to deep peels, Roy uses the Jessner peel on the neck and chest to minimize the transition between the face and neck. Despite side effects and complications,¹³⁻¹⁵ chemical peeling and dermabrasion have produced dramatic, long-lasting clinical and histologic improvements in the face.^{12,16-19} Superficial peels (eg, α -hydroxy acids) and medium-strength peels, however, have little effect on fine wrinkles.²⁰ With α - and β -hydroxy peels there is no downtime and these peels can be used on the necks of all skin types.⁶ These peels provide no lasting change to skin ultrastructure. When using medium to deep chemical peels to rejuvenate the face, the use of Jessner peel on the neck may minimize the transition from the treated face to the untreated neck.⁶ (The neck often remains untreated with medium or deep peels for fear of scarring or hypopigmentation.)

One type of chemical peel has received considerable study by Hetter²¹⁻²⁴ and Bensimon.²⁵ The croton oil peel has been shown to produce consistently excellent cosmetic results, even in the neck. This peel evolved from the classic Baker-Gordon peel (phenol and croton oil) reported in 1962²⁶ and is still used by some physicians. Although the Baker-Gordon peel provided dramatic improvement, its use was sometimes limited because hypopigmentation and a waxy porcelain appearance often resulted after treatment. In 2000, Hetter²¹ showed that the active ingredient was croton oil rather than phenol. Hetter further showed that lowering the concentration of phenol, varying the concentration of croton oil, and using a specific application technique permitted surgeons to control the depth of penetration during treatment. Thus, surgeons could treat facial areas of different skin thickness, even the eyelids.²⁵ A complete protocol for the modern croton oil peel in facial rejuvenation (including the neck) has been published²⁵ and is summarized.

CROTON OIL PEEL

Patient selection is critical to the success of croton acid peels. Patients tolerate the peel better if they know what to expect, especially after a procedure is completed. Prospective candidates are shown photographs of patients in various recovery stages and the candidates may also have an opportunity to speak with previous peel patients. With the neck, the goal is to blend skin color with that of the more aggressively treated face rather than to remove wrinkles.²⁵

When a patient consents to treatment with a croton oil peel, the neck skin is first treated with tretinoin 1% once daily, beginning 4 to 6 weeks before peeling. If the skin becomes irritated, the frequency is reduced. Hydroquinone 4% is applied twice daily to prevent postinflammatory hyperpigmentation, and glycolic acid 8% is given once daily to facilitate exfoliation. These preparatory treatments are stopped 4 to 5 days before peeling. By that time, the skin is erythematous and flaky and patients have been told this is normal. Antiviral medication is routinely started 3 days before peeling and continued for 1 week after peeling to prevent herpetic complications.²⁵

For the thin skin of the neck, a croton oil 0.1% solution is prepared by dilution of the croton oil 0.2% solution, which is, in turn, prepared from a stock solution of phenol (35% by volume) and croton oil (4%) as described.²⁵ The 0.1% croton oil peel is a light peel and affects only the epidermis. The peel solution is applied by sequential light applications with gauze and cotton-tipped applicators. The acid precipitates skin protein to form a white frost in 10 to 20 seconds. The depth of penetration is judged by the degree of frosting. As discussed previously, the concentration of croton oil and the application technique are the primary determinants of penetration depth. The endpoint of treatment is the degree of frosting, which is a subjective and experience-based judgment. Outcomes are optimized when practitioners have sufficient experience to recognize when the appropriate depth is reached as revealed by the frost. For the neck, the light peel results in a "light, wispy frost that is not at all organized."²⁵

When the frosting subsides, an emulsion of Polysporin (Pfizer, New York, New York) and lidocaine jelly is applied over the peeled areas and given to patients for continued use. The mixture moisturizes the peeled area, prevents crusting, and provides analgesia. Postpeel medication includes a narcotic agent for pain, ibuprofen, Medrol Dosepak (Mova Pharmaceutical, Manati, Puerto Rico), and, if necessary, a sleep medication. Healing is complete in 2 weeks, although erythema persists

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