

CO₂ and Erbium:Yag Lasers Improves Acne Scars

Aristides Arellano Huacuja^{*1}, Dafne Arellano Montalvo², Anja Arellano Montalvo³

¹Department of Plastic and Reconstructive Surgery

²Department of Dermatology

³Dermatology and Aesthetic Surgery Clinic of Puebla (MEX)

Received: March 26, 2021; Accepted: April 10, 2021; Published: April 19, 2021

***Corresponding author:** Aristides Arellano Huacuja, Department of Plastic and Reconstructive Surgery, 20 SUR 2539 Col. Bella Vista Puebla, México, Tel. No: (011-52) 222 266-91-70, 243-65-05; Fax. No: (011-52) 222 237-74-94; E-mail: aristidesarellan@yahoo.com.mx

Abstract

The facelift and skin resurfacing techniques are carried out during the same surgical procedure, in order to save time and improve the patient recovery. Acne scars, photo-aging signs such as pigmentations and changes in skin color are treated with the skin Resurfacing technique. Many surgeons for neck and cheeks is performed as usually have mentioned the face-lift technique. Using these two techniques, a full-face restoration is obtained with only one surgical procedure. The patient recovery is quicker and the result obtained is much better. 1064 cases were done with this procedure and minimal complications have been observed.

Introduction

To improve Acne scars we employ to different techniques, in those cases that are not need to have a face-lift the CO₂ 10.6 MICRONS WAVELENGTH and Erbium: Yag laser 2.94 MICRONS WAVELENGTH is employ simultaneously. For cases were skin laxity is important we start performing the acne scars restoration with the face-lift procedure and SMAS plication. Then skin resurfacing is done in one surgical stage. However, it is needed between 4 to 6 weeks to recovery from the skin resurfacing with CO₂/Erbium laser. This procedure takes less recovery time and edema, redness and patient discomfort are shortly. We started in 2000 to perform both techniques with Erbium:Yag and CO₂ Lasers. It is also carried out the Blepharoplasty in the upper eyelid and the tranconjunctival approach in the lower eyelid with the CO₂ laser in the cut mode when is necessary [1-4].

Technique

Once the patient is marked in the places to be corrected, the procedure is started making the endovenous anesthesia combined with the local anesthesia (tumescent technique). Some patients ask for general anesthesia, in those cases special laser endotracheal cannulas are used to ensure a more safety procedure. When local anesthesia has been placed in the neck, cheeks and the forehead in patients with skin ptosis, the incision in pre and post-auricular zone is started with the CO₂ laser in the cut mode at 6 Watts. The skin undermining is done using scissors, from the zygomatic arch to the nasolabial folds and the full neck. At the end, the hemostasia and the SMAS plications are done with 3-0 Nylon. The excess skin is removed and stitches are placed in the

area.

After finishing both sides of the face, the Blepharoplasty is performed if there is necessary. It is important to remember that all patients wear laser eye protectors to avoid eye damage [5-8].

If it is needed to perform an endoscopic forehead or a coronal approach, it is possible to combine those procedure and the skin resurfacing at the same time. Laser Resurfacing is done at Rate 10, Fluence 14 of Erbium:Yag and 2 Watts of CO₂, no scan was used at one step. The laser removes the skin layers by vaporization; therefore, it is important to know the amount of energy that is being transmitted to the skin surface in order to control the depth penetration and to avoid skin damage. Remember that Erbium and CO₂ lasers work in different ways, Erbium penetrate more skin layers in one pass than CO₂ giving less heat to skin and CO₂ produce more skin heat with less penetration and more collagen formation.

Skin Resurfacing carried out with the Erbium:Yag and CO₂ lasers are used in the forehead, the upper and lower eyelid, the internal and external canthal of the eyes, the nose, the cheeks, the Perioral zone and the chin. In those zones sometimes we perform one or two passes. Permitting the treatment of fine and deep acne scars, age spots and photo aging. The laser Fluence is increase or decrease depending on the acne scars deepness, sun damage, thickness, texture and skin color. In the first step, the laser is applied in the area to be treated. Once the first step is finished, we lived the burn skin in place. The second step is done decreasing or keeping the same laser energy. Sometimes on the cross-foots or the Perioral area a third step is carried out.

However, in areas where the surgical procedure was performed we employ only the CO₂ laser at 5 watts in one pass. The laser is normally applied in the areas describe before during the same procedure. It is important to understand that the laser should be deeper in the central part of the face and lightly in the area where the surgical procedure was performed [9-12].

With this method the redness and changes in color pigmentation disappear at the same time in both areas, taking only 2 or 3 weeks for patients with skin type 3, 4 and 5 to get the same skin texture.

In cases where there is not necessary to realize a face-lift we only employ the CO₂/Erbium laser combination. Once the anesthesia



was done as we describe above we employ the CO₂ laser in the cut mode at 2 watts. Laser energy is applied to skin defocused in order to get skin retraction in deeper scars. After that we perform the skin resurfacing with Erbium:Yag laser at different rates depending on skin tone.

When the procedure was done an occlusive bandage is used by 48 hrs helping to heal the skin more quickly. Followed by a moisturizing cream with sun block 100% in all the face during the morning EVERY 4 HOURS. At night we recommend a Vaseline cream that help to decrease the redness, dry skin and avoid hyper-pigmentation.



Conclusion

We have seen that performing these techniques, the patient results are much better. If face lifting is carried out at the same surgical time with the skin resurfacing patients recovery takes less time and discomfort. In 90 days patient skin color is in the same tone. The skin looks much younger, smooth and facial restoration is highly satisfactory. Acne scars improves with both procedures 60 to 80 percent depending on deepness. It is possible to perform different facial techniques at the same time such as fat graft, Gore-Tex implant, chin implant, endoscopic forehead, etc.



References

1. Arellano, Arellano O, Fernandez. CO₂ laser skin resurfacing and facelift in the same surgical procedure. XXXI WORLD CONGRESS OF THE INTERNATIONAL COLLEGE OF SURGEONS. Argentina. Abstract. 1198:229-232.
2. Arellano H, Arellano O, Fernandez. CO₂ laser skin resurfacing and facelift in the same surgical procedure. 9th International Symposium on Cosmetic Laser Surgery. Las Vegas U.S.A. Abstract. 2000.
3. Arellano H. CO₂ laser skin resurfacing and facelift in the same surgical procedure. Journal Cutaneous Laser Therapy. 2000;104(2).
4. Aristides Arellano-H. CO₂ laser skin resurfacing and facelift: what are the issues. Journal Cutaneous Laser Therapy. 2001;201(3).
5. Tessier P. The conjunctival approach to the orbital floor and maxilla in congenital malformations and trauma. G Maxillofac Surg. 1973;1(3).
6. Shapahay SM, Strong MS, Anastasi GW, et al. Removal of rhinophyma with the carbon dioxide laser. A preliminary report. Arch Otolaryngol. 1980;106:257-259
7. Fitzpatrick RE, Esparza J, Goldman MP. The depth of thermal necrosis using the CO₂ laser: a comparison of the superpulsed mode and conventional mode. J Dermatol Surg Oncol. 1991;17:340-344
8. Zweig AD, Meierhofer B, Muller OM. Lateral damage along pulsed laser

- incisions. *Lasers Surg Med.* 1990;262-274
9. Weinstein C. Ultrapulse carbon dioxide laser removal of periocular wrinkles in association with laser Blepharoplasty. *J Clin Laser Med Surg.* 1994;12:205-209
10. Weinstein C, Alster TS: Cutaneous laser resurfacing. In: Alster TS, Apfelberg DB, eds. *Cosmetic Laser Surgery*. New York: John Wiley & Sons. 1996:27
11. Fitzpatrick RE, Goldman MP, Esparza J. Clinical advantage of the CO₂ laser superpulsed mode. Treatment of verruca vulgaris, seborrheic keratoses, lentigines, and actinic cheilitis. *J Dermatol Surg Oncol.* 1994;20:449-456
12. Ginsbach G: Periorbital aesthetic surgery with KTP-laser presented at Laser Med '93, International Kongress Laser Medizin, Munich, Germany. 1993.