

Case Reports

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Clinical case / CO₂ Laser: Post-operative complication

Caso Clínico: Laser ablativo fracionado de CO₂: complicação pós-operatória

ABSTRACT

There are many treatments proposed for the aging skin. CO₂ laser has a growing indication as such. The author reports a case involving a complication using treatment with this technology in the periorbital region.

Keywords: blepharoplasty; laser therapy; carbon dioxide; treatment outcome.

RESUMO

Os tratamentos propostos para o envelhecimento cutâneo são diversos. O laser fracionado de CO₂ tem tido crescente indicação. Relata-se um caso de complicação de tratamento com essa tecnologia na região periorbital.

Palavras-chave: blefaroplastia; terapia a laser; dióxido de carbono; resultado de tratamento.

INTRODUCTION

Cutaneous rejuvenation is one of the most sought after cosmetic treatments in dermatology practices.^{1,2}

Fractional carbon dioxide (CO₂) laser assisted cutaneous renewal (resurfacing) is an effective treatment foraging skin.³

Complaints of wrinkles and sagging is very common, particularly in the periorbital region. Treatments in this anatomic region must be precise and delicate. In addition, the ocular function must be untouched, as well as an ability to maintain the appearance of a natural gaze.⁴ Blepharoplasty is considered the gold standard of periocular treatment. However several therapeutic proposals have been indicated, fractional CO₂ laser among them.

CO₂ laser has a great affinity for water,^{3,4} its principle being the selective photothermolysis.⁵ It is characterized as being an accurate and effective method for removing part of the damaged epidermis,⁶ stimulating neocollagenesis and its contraction⁴ and organizing elastic fibers in the dermis.⁷ Furthermore, type I collagen – which is the most abundant collagen in the dermis – is primarily synthesized by fibroblasts in the dermis, which in turn are the targets of photorejuvenation.⁸

Fractional photothermolysis is a laser modality that creates numerous zones of microscopic injuries, which can be controlled for in its depth and its density.⁴

Microscopic columns of epidermal necrosis are produced with denaturation of collagen. The tissue around those columns remains intact, resulting in a fast reepithelization process (approximately 24 hours), with the treatment coursing with minimal side effects.^{3,9,10}

CO₂ laser fractioning has undoubtedly brought huge benefits. However, a false perception that it comes with an absence of side effects has also disseminated.⁸ Although considered a safe procedure, complications may arise even with experienced hands.^{1,2}

Immediate complications include local pain, contact dermatitis, and secondary infections.^{1,2} Delayed side effects include infections, milia, acne, persistent erythema,³ post-inflammatory hyperchromia, hypopigmentation, scarring, synechiae, and ectropion.^{1,3}

CASE REPORT

A 66-year-old female patient (formerly a physician), sought care for complaints of “facial wrinkles”.

The patient had hypertension and cardiac arrhythmia. Surgical lifting was contraindicated due to a pre-existing heart condition. She made continuous use of valsartan, amlodipine, enalapril, and sotalol chlorhydrate as antiarrhythmic. The resurfacing was carried out in the lower eyelids with CO₂ laser (AcuPulse / Lumenis / USA) at an energy of 10 mJ and density of 10%. (Figure 1)

Approximately 48 hours after the procedure the patient returned with significant periorbital edema. In addition, the patient had an area of ulceration at the site of contact between the edematous skin and the spectacles for refractive correction. (Figure 2) Oral prednisolone (60mg/day) was prescribed, being reduced to 20 mg/day after 3 days. Cephalexin (500mg 4 times a day for 8 days) was also prescribed. In addition, an antibiotic-steroid cream (betamethasone and gentamicin) was dispensed and applied 2 times a day for 8 days.

The patient showed complete regression of edema after roughly 5 days, and healing of the post-traumatic ulcer after 8 days.

In contrast to traditional CO₂ laser – which has potential for more marked and frequent adverse effects, 5 ablative fractional CO₂ is better tolerated and yields quite satisfactory final results with a single session.^{7,9,10}



FIGURE 1: Immediately post-operative. Resurfacing of the lower eyelids. AcuPulse, 10MJ energy density and 10% density



FIGURE 2: Two days after the procedure: important lower bipalpebral oedema. Ulceration in the left infraorbital region



FIGURE 3: Absence of unsightly scars and quite satisfactory aesthetic result

Most complications of resurfacing do not concern, however, to its type but to the depth, amount of overlapping pulses, density used, pulse duration, and fluence.³

According to Kalil, 1 undesirable risks can be minimized through the understanding of the laser’s function, proper training, and correct indication.

The edema of the periorbital region peaks on the morning following the procedure, 8 as happened with the patient in question. In the most intense cases of edema 40-60mg/day prednisone can be used for 2 to 4 days. If the edema lingers for more than 5 days, the possibility of secondary infection must be taken into consideration. In the present case, the authors chose to administer antibiotic therapy due to the risk of unsightly scarring.

CONCLUSION

The use of lasers in dermatology has been greatly diffused. Despite being a relatively simple technique, its side effects should be an ever-present concern.

The author highlights that a simple guideline – not using prescription spectacles or even sunglasses during the post-operative period – can avoid inconveniences for both the physician and the patient. Fortunately no scars have arisen in the present case and the final cosmetic result was quite satisfactory for both parties. (Figure 3) ●

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