

# The Management of Lip Scarring with Diode Laser 980 nm – A Case Report

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## Abstract

**Background:** Scars arise from a variety of etiologies in the perioral region. Traumatic scars are inevitable consequences of healing after various injuries including rubbing or scraping or thermal damage. There are different options for the treatment of post traumatic scarring depending from the size and location with different rate of success like: corticosteroid injection, the use dermal fillers, plastic surgery, laser.

**Case report:** We report a case of proven efficacy of using 980 nm diode laser for the treatment of post – traumatic scarring of the upper lip.

**Conclusion:** The use of 980 nm Diode laser is a good option for the management of lip scarring based on the biophysical concept of laser – tissue interaction.

**Keywords:** scarring, photocoagulation, diode laser 980 nm, wound healing, functional disturbance.

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## INTRODUCTION

Traumatic scarring is one of the most common complications after soft tissue injury caused by burns and trauma. Traumatic scars affect the quality of life due to disfigurement, restricted motion and symptoms of pain and itching (1,2,3). Scars can be present in the oral cavity also after surgical procedures as well as vascular anomalies (4,5,6). A scar is a natural response after a wound healing from an injury, surgery or burn. Different modalities can be used for the treatment of these lesions like: corticosteroid injection, dermal fillers, plastic surgery, lasers (7,8). A variety of lasers can be helpful to improve a scar. Diode laser can dramatically speed up wound healing by activating tissue regeneration inducing the expression of heat shock proteins by thermal impacts (9,10). The use of laser reduces the appearance of existing raised scars and keloids, reduce pain, itching, hardness and swelling. Studies show that laser therapy can give patients impressive results (11).

## CLINICAL CASE

M.LL, a 26 years old female patient, presented to the Oral Surgery Department, University Dental Clinic of Tirana with a scar on the upper lip (Fig. 1). The patient complains about this scar, which has a strong consistency and compromises her appearance. Based on the anamnesis, it appears that the patient fell at the age of 7 and suffered a wound on her upper lip, which was processed and sutured in the surgery department. After several years, at the end of the growth process she noticed

the scarring, which worried her from an aesthetic perspective.



**Figure 1.** Scar of upper lip

A diagnosis was established based on the objective intra- and extra-oral examination, and with the patient's consent, the scarring was treated with a 980 nm diode laser.

Intralesional photocoagulation was applied with local anesthesia and without contact, using the continuous method with an energy density 3 w (Fig. 2). At the end of the treatment, the scar area turned white, which signals the end of the photocoagulation process (Fig. 3). The patient was recommended to eat normal food, rinse her mouth with Chlorhexidine solution twice a day and was informed about the need of re evaluation in order to evaluate wound healing and the postoperative results.



**Figure 2.** During the treatment with diode laser 980 nm



**Figure 4.** Wound healing 2 weeks after the treatment



**Figure 3.** Immediately after the photocoagulation was completed

The patient did not report pain, swelling or discomfort in the first week after the intervention. Referring to the treatment protocol, the beginning of wound healing's regenerative phase is observed in the second week (Fig. 4). In the fourth week after the intervention, the wound was fully healed (Fig. 5), with no changes in consistency, ensuring a good aesthetic effect, too.



**Figure 5.** Wound healing 4 weeks after the treatment

## DISCUSSION

Scars are frequently reported and discussed in literature. The formation of scarring, regardless of its origin, causes patient dissatisfaction and emotional problems (12,13,14).

Traumatic scars are classified into hypertrophic, atrophic, superficial and keloid. This classification facilitates the selection of treatment methods based on the morphological and histological characteristics. This classification also helps to select the most suitable laser system and wavelength while considering the biophysical principles of the laser-tissue reaction (18, 19, 20).

Treatment methods include both surgical and non-surgical. The application of laser to treat scars is a fast, efficient, and minimally invasive method. The most useful laser systems are: diode laser 980nm, 810 nm, Nd:YAG laser, Er:YAG laser, IPL (Intense Pulsed Light) (15, 16, 17).

The treatment protocol of our clinical case follows the standardized reported methodology.

The management of the clinical case was carried out with a 980 nm laser diode using the non-contact method and with an energy density of 3w. This technique is based on the concept of photothermolysis (21).

The lack of postoperative edema and pain as well as the good healing of the wound corresponds to the results reported in literature (22).

Laser treatment follows the principles of mini-invasive surgery in the treatment of various lesions of the oro-maxillofacial region.

## CONCLUSION

The use of 980 nm Diode laser is a good option for the management of lip scarring based on the biophysical concept of laser – tissue interaction. Wound healing was good, without swelling and no alteration of tissue consistence.

Laser surgery is mini-invasive method, conform the concept of contemporary surgical principles. This modality implies a safe method, being also comfortable for both patient and operator.

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