



Case Report

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Temporomandibular Disorder Management with Photobiomodulation



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Abstract

Low-power laser or photobiomodulation in Dentistry field have been used to reduce inflammation and edema, promote pain reduction and as an antimicrobial agent. The purpose of the present study was to report a clinical case to represent and illustrate the positive observed results of laser carried out treatments conducted in a Brazilian Dental School. It collected information of the pathological condition, number of sessions and the outcome of laser treatment. The collected data was tabulated and subjected to an exploratory analysis. The patient was satisfied with the treatment performed and considering the good results obtained with this conservative treatment, it was considered a great success. Laser photobiomodulation has brought benefits to dental patients, contributing to the restoration of health and well-being.

Keywords: Dentistry; Laser Biostimulation; Analgesia; Antisepsis

Abbreviations: GaAlAs: Gallium Aluminum Arsenide; LLLT: low-level laser therapy; TENS: transcutaneous electric nerve stimulation

Introduction

Low-power laser treatments evolved and took a prominent place in treatments in the medical field and modern Dentistry [1,2]. Currently, patients can use lasers to minimize or alleviate symptoms of orofacial pain, hypersensitivity, teeth whitening and antimicrobial agents [1,3-5]. This treatment provides pain reduction and tissue modulation, through the release of low energy to a target cell to stimulate its membranes and organelles, leading to active photobiomodulation [1,6]. Laser therapy benefits on different pathological conditions treatment have recently been evaluated by some researchers. Advantages include minimally invasive, accessible, and non-traumatic techniques [7]. It has been reported analgesic benefit through the minimization of histamine, prostaglandin, increased serotonin, acetylcholine, bringing significant results in the pain threshold of treated patients [1,7,8]. Currently, the use of lasers in Dentistry is incredibly popular, and can now be considered a reality in Brazil, and equipment that should be part of daily clinical practice in the dental office and in educational institutions. The purpose of the present study was to report a clinical case to represent and illustrate the positive observed results of laser carried out in a Brazilian Dental School.

Case Report

Dental School already had a laser device for use in practical classes. The laser is routinely used in various clinical applications under Professors supervision, mostly for analgesia or biostimulation. In most cases, dentin hypersensitivity is treated, but also for the treatment of lichen planus or temporomandibular disorder, prevention of osteonecrosis of the jaw due to the use of bisphosphonates, management of postoperative complications (such as paresthesia after dental extractions), analgesia and healing improvement of herpetic lesions, and trigeminal nerve stimulation in patients with neuralgia. In the clinical case reported here, after consent to the publication of the case, it was registered information regarding treatment of a female patient with a chief complaint of temporomandibular disorder in the left side of the face (Figure 1).

The automatic application protocol suggested by the equipment was carried out 5 times a week, for 2 weeks. It was used Photon Lase® equipment (DMC Equipments, São Carlos, SP, Brazil), which has the following characteristics: Gallium

Aluminum Arsenide (GaAlAs) semiconductor diode, 6 J of energy per point, 60 s, 100 mW of power in the infrared range ($\lambda = 808$ nm). Application points were on the temporal muscle and along the entire length of the masseter muscle. Patients reported relief of discomfort symptoms and improvement in sensitivity in the treated region. The results of the present study corroborate current scientific evidence about using photobiomodulation with low-power laser to treat temporomandibular disorders. A recent systematic review with meta-analysis compared efficacy of low-level laser therapy (LLLT) with different wavelengths

and transcutaneous electric nerve stimulation (TENS) that is conventional therapy to treat pain caused by temporomandibular disorders⁹. In the meta-analysis, almost a thousand patients were considered. Experimental groups (treated with LLLT) showed an overall improvement in pain scores, when compared with the controls. LLLT with wavelength ranging from 910 nm to 1100 nm produced best results (pain relief) immediately after treatment even after one-month [9]. The authors concluded LLLT had better short-term efficacy than TENS in the treatment of pain caused by temporomandibular disorders.

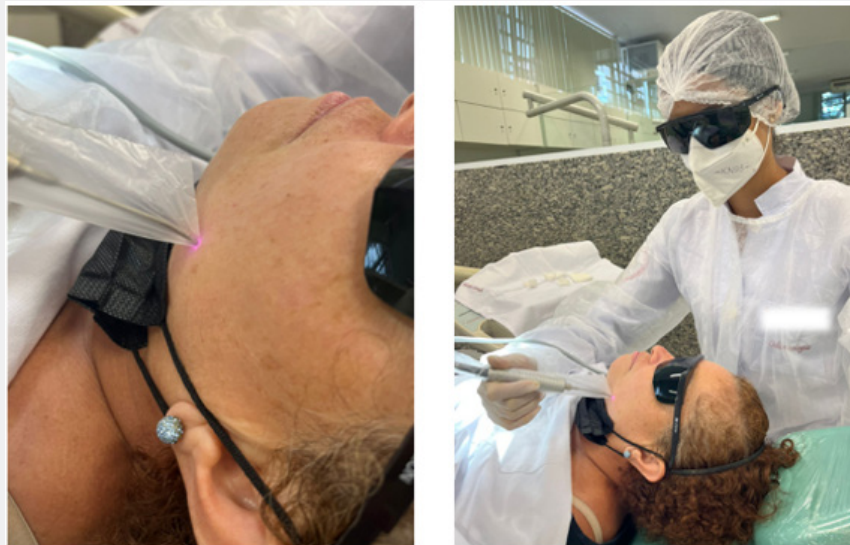


Figure 1: Application of low-power laser (photo biomodulation) in the left side of the patient face.

Conclusion

The patient was satisfied with the treatment performed and considering the good results obtained with this conservative treatment, it was considered a great success. Laser photobiomodulation has brought benefits to dental patients, contributing to the restoration of health and well-being.

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