ANXIETY IN PATIENTS UNDERGOING ILIB AS A METHOD OF CONTROLLING DENTAL FEAR DUE TO IMPACTED TOOTH EXTRACTION

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ABSTRACT

The extraction of third molars is an invasive surgery that can cause fear and anxiety in patients. This emotional state can lead to physiological changes that can hinder the clinical procedure. Therefore, methods to control this have been investigated. One therapy that has beneficial effects for anxiety control is intravascular laser blood irradiation (ILIB). The aim of this study was to evaluate the effectiveness of ILIB in controlling anxiety in patients undergoing lower third molar extraction. A randomized clinical trial was conducted with 18 patients with indications for lower third molar extraction. Participants were allocated into two groups: a control group (n = 8) that underwent placebo treatment; and an ILIB group (n = 10), which was irradiated in the region near the radial artery with a red laser (660 nm), 100 mW, continuous mode, for 30 minutes. Anxiety was assessed before and after the ILIB session using the STAI-Y questionnaire. Patients undergoing ILIB showed a significant reduction in anxiety when comparing initial and final scores. ILIB demonstrated efficacy in controlling anxiety in the participants involved.

Keywords: Low-Intensity Light Therapy; Third Molar; Anxiety in Dental Treatment

INTRODUCTION

Anxiety is characterized as an emotional reaction of distress in response to the anticipation of a future event and may be associated with systemic changes. Among the physiological responses caused by anxiety are changes in heart rate, blood oxygenation, and blood pressure (CUNHA et al. 2020; HOSGOR, COSKUNSES, TOKUC et al. 2021; YILDIRIM, TURKMENOGLU, MOLLAOGLU et al. 2022). Associated with individual patient characteristics, such as age, gender, and physical status classification according to the American Society of Anesthesiologists (ASA), these variations make the management of the patient- ly challenging and may contribute to the failure of dental treatment (ROY-BYRNE et al. 2015).

Dental appointments are often cited as a situation that causes anxiety, especially in surgical procedures, due to factors such as previous negative experiences and traumatic reports from patients (SILVEIRA et al. 2021). According to Gadve et al. (2018), four minutes after local anesthesia for third molar extraction, patients' heart rates peak, which may be related to increased anxiety at that time. Thus, third molar extraction, a common procedure in dental practice, can cause fear and anxiety in patients due to its surgical nature.

Currently, pharmacological and non-pharmacological methods are used to control the effects of anxiety during tooth extraction (DANTAS et al., 2017). A practice that has not yet been studied is the modified technique of intravascular laser blood irradiation (ILIB), which consists of irradiating the radial artery site with a low-power red laser for approximately 30 minutes. The probable anxiolytic effect of ILIB has been demonstrated in pediatric patients by Rangel and Pinheiro (2021). The results show that children undergoing ILIB have modulation of anxiety hormones, suggesting that ILIB has an effect on anxiety control. (RANGEL; PINHEIRO, 2021).

Therefore, considering the scarcity of studies on this topic, it is of great importance to conduct clinical trials to expand knowledge in this area and contribute to clinical practice. In this context, the objective of the present study was to evaluate the efficacy of ILIB in controlling anxiety in patients undergoing extraction of impacted lower third molars.

METHODOLOGY

This study was approved by the Ethics Committee of UniEVANGÉLICA (CAAE: 70342023.0.0000.5076) and registered in the Brazilian Registry of Clinical Trials (REBeC: RBR-9ycg67p). Eighteen patients with indications for lower third molar extraction were selected and allocated to two groups: Group 1 (placebo) and Group 2 (ILIB). Participants were blinded to whether they would undergo ILIB or not. For this purpose, in group 1 (n=8), the equipment (LaserDuo, MMOptics Equipamentos, São Carlos, Brazil) was programmed in mode il.1, but without energy irradiation to the patient.

In patients in group 2 (n=10), mode il.1 of the equipment was selected, which has the following parameters: wavelength of 660 nanometers (red laser), 100 mW of power, continuous mode, with light irradiation for 30 minutes, ^{and}a laser beam exit area of$^{3\ mm^2}$. The equipment was positioned over the radial artery and secured with the manufacturer's wristband.

Anxiety about dental treatment was assessed using the Portuguese version of the *State-Trait Anxiety Inventory*, Form Y (STAI-Y; DANIEL et al., 1995; SILVA and CORREIA, 1997) before and after the ILIB/placebo session. The STAI-Y questionnaire in T-1 format was used in this study to assess the current state of anxiety. The questionnaire has 20 questions with four alternatives each, in which the patient indicates whether they totally agree or disagree with the statement. The scores of the items were added to obtain the total score, which could vary between a minimum of -30 (low anxiety) and a maximum of 50 points (high anxiety).

The questionnaire was administered before local anesthesia (t0) and four minutes after the end of local anesthesia (t1). According to Gadve et al. (2018), this time corresponds to the maximum heart rate recorded during surgery for third molar extraction.

RESULTS

The STAI-Y questionnaire showed that in the placebo group, the scores remained stable, while in the ILIB group, patients showed a significant reduction in anxiety when comparing their initial status and the scores obtained 4 minutes after anesthesia. Table 1 shows the results of the STAI-Y questionnaire.

Table 1. STAI-Y scores of study participants. Results expressed as mean ± standard deviation.

		Total (N=18)	**Placebo (n=8)**	**ILIB (n=10)**	**p-value****
Score STAI-Y	t0	-14.67 ± 12.15	-19.50 ± 8.21	-10.80 ± 13.74	0.203
	t1	-18.17 ± 8.53	-18.63 ± 8.30	-17.80 ± 9.13	0.897
	Variation	-3.50 ± 9.50	0.87 ± 7.75	-7.00 ± 9.65	0.101
	p-value*	0.126	0.779	0	

Abbreviations: STAI-Y – *State-Trait Anxiety Inventory*, Form Y.
*Wilcoxon test for comparison between initial heart rate (t0) and heart rate 4 minutes after anesthesia (t1).
**Mann-Whitney test for comparison between the Placebo *and* ILIB groups.
STAI-Y score of study participants. Source: The authors (2024).

CONCLUSION

This study showed that ILIB presented promising results in controlling anxiety in patients undergoing extraction of impacted lower third molars.

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