

# STATEMENT

By

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ON

A dissertation work by

**Dr. Velimira Hristova Georgieva**

– PhD student

At the Department of Oral Surgery, Faculty of Dental Medicine Varna, titled  
**„APPLICATION OF DENTAL LASERS FOR TREATMENT OF  
PATIENTS IN ORAL SURGERY”**, presented for acquiring the  
educational and scientific title “Doctor” with supervisor  
Prof. Tihomir Georgiev, DMD, PhD, DSc

## **Relevance of the topic**

In the last few decades lasers have been used in all areas of dentistry - oral surgery, orthodontics, periodontology, endodontics, cariesology, prosthetic dental medicine, pediatric dentistry.

A major problem in the treatment of patients in need of surgical interventions in dentistry is the postoperative discomfort, which can last up to 10-14 days, depending on the procedure and individual variations – subjective symptoms, age, fear of the upcoming intervention etc.

The PhD student proposes the use of a new, contemporary, minimally invasive method, offering maximal comfort to the patient intra- and postoperatively. Such method is laser treatment. The advantages and indications for its application in oral surgery have been thoroughly described.

In oral surgery, laser treatment is a relatively new, contemporary method that is an alternative to standard surgical techniques. However, the use of dental lasers in oral surgery is still limited worldwide and especially in our country, due to its higher cost and contradictory evidence regarding the benefits it provides.

### **Structure of the dissertation work**

The analysis of data in the literature review denotes the excellent awareness of the PhD student regarding the mechanism of action of laser radiation, the different types of lasers that can be used in oral surgery. Special attention is given to the use of dental lasers in soft tissue interventions, as well as the potential to treat hard tissues in oral surgery. A distinct subsection in the literature review is assigned to the biostimulating effect of dental lasers on soft and hard tissues.

The PhD student thoroughly and exhaustively researches the issue, which is a basis for the correct formulation of unsolved problems and determination of the objective and tasks of the dissertation work.

### **Objective, tasks, materials and methods**

The objective of the dissertation work is formulated according to the lack of data in the Bulgarian literature on the effectiveness of patient treatment in oral surgery using dental lasers.

The three provided tasks logically follow the idea, allowing the execution of the research.

Over 153 patients have been examined, assigned for correction of the upper labial frenulum and 52 of them were included in the study as they matched the criteria, stated by the PhD student.

Two types of lasers have been used: Er,Cr:YSGG and diode laser, based on which the patients have been divided in two groups.

Confirmatory methods have been applied:

On task 1: Method for performing laser frenulotomy with diode laser – epidemiological methods, questionnaire methods, to determine the degree of fear and anxiety during the intervention, the need to take analgetic medications. Clinical methods – assessing the bleeding during the procedures, the need for suturing, the rate of epithelization of the wound, duration of scar formation etc.

On task 2: Method for performing laser apicectomy with Er,Cr:YSGG laser - radiological methods, reported with operative time, presence of discomfort, assessed with the degree of pain, presence of swelling, rate of epithelization, volume of the bony cavity and bone density.

On task 3: Method for treatment of alveolitis with diode laser – clinical and epidemiological methods for assessment of the hyperemia around the alveolus, presence of exposed bone, formation of granulation tissue, epithelization of the alveolus etc.

The applied statistical methods have been excellently selected and allow for the correct analysis of the obtained data and their graphic illustration.

## **Results and discussion**

The results and discussion have been correctly presented and again demonstrate the in-depth understanding of the issue by the PhD student.

## **Conclusions and contributions**

11 conclusions have been formulated, denoting the results of the presented tasks of the dissertation work, among which of particular importance for the clinical practice are:

Conclusion 3. The Er,Cr:YSGG laser provides significant acceleration of soft tissue healing processes compared to diode lasers, due to the lack of thermal effect and charring of the soft tissues.

Conclusion 7. The Er,Cr:YSGG laser used for removal of bony tissues during cystectomies and apicectomies is an irreplaceable tool when operating on fearful, anxious and uncooperative patients as there are no sensations of vibration, pressure and noise in the contactless mode. This provides broader opportunity of performing interventions under local anesthesia in such patients.

Conclusion 8. The application of Er,Cr:YSGG laser for interventions, requiring removal of bony tissues, aids in the accelerated bone regeneration.

The contributions of the dissertation work have also been formulated, of which a notable mention deserve the innovations in the work – conduction of an extensive study, proving the advantages of the application of dental lasers in various fields of oral surgery.

### **Conclusion**

The aforementioned gives me reason to assume that Dr. Velimira Hristova Georgieva has presented a completed dissertation work, which fulfills the requirements of the Regulations of development of academic staff. I support and confirm my positive vote for awarding the PhD student with the educational and scientific title “doctor”.

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