

S T A T E M E N T

By Assoc. Prof. Elitsa Georgieva Deliverska-Aleksandrova, DMD, PhD

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Member of the Scientific Jury according to order № P-109-~~108~~108/12.05.2022

Of the Rector of MU - Varna

Regarding: **Acquiring the educational and scientific degree “Doctor”** in the field: Higher education: 7. Health and sports. Professional field: 7.2. Dental Medicine. Doctorate program: “Oral Surgery”

On: **dissertation** topic: „**Application of dental lasers for treatment of patients in oral surgery**”

Author: Dr. Velimira Hristova Georgieva, full-time PhD student on a procedure for acquiring the educational and scientific degree “Doctor”, Faculty of Dental Medicine, Medical University - Varna

Scientific supervisor: Prof. Tihomir Georgiev, DMD, PhD, DSc

1. General presentation of the dissertation

This statement is prepared on the basis of order № P-109-208/12.05.2022 of the Rector of MU – Varna.

The presented set of materials on paper and electronic media is in accordance with Art. 44 (3) of the Regulations for the development of the academic staff in MU – Varna.

The PhD student has attached 3 publications on the topic of the dissertation, which quantitatively and qualitatively meet the legal requirements for a dissertation work.

2. Brief biographical data about the PhD student

Dr. **Velimira Hristova Georgieva** was born on 28.06.1992 in Varna.

– 2017 – master’s degree in Dental Medicine, Faculty of Dental Medicine at the Medical University “Prof. Dr. Paraskev Stoyanov - Varna”.

– 2018–2022 – full-time assistant professor at the Department of Oral Surgery, FDM, MU - Varna

– 12.2021 – acquired a specialty in Oral Surgery

Speaks fluent English.

Member of the BDA.

3. Relevance of the dissertation

In the dissertation an interesting and debatable issue for the contemporary dental practice is reviewed and analyzed, regarding the use of lasers for various interventions in the oral cavity. In the last few years there is an aspiration to find new, contemporary, minimally invasive methods, offering maximal comfort for the patient intra-, as well as postoperatively. In the present dissertation the effectiveness of application of different types of lasers for some surgical interventions in the oral surgical practice is analyzed.

In Bulgaria the issue of application of lasers as an alternative to standard surgical methods, used in oral surgery, has not been reviewed and there is no consensus on the matter.

4. Knowledge of the issue

In the present dissertation work Dr. Velimira Hristova Georgieva shows profound knowledge on the subject matter and skills for independently conducting scientific research.

The exposition is written in good scientific language with slight stylistic inaccuracies. The author has conducted a thorough and extensive critical analysis of the literature and has formulated the debatable and unsolved problems. The literature review is informative and concludes with a clear motivation for the need to clarify the advantages and effectiveness of the different lasers for surgical interventions in the oral cavity.

This has permitted the PhD student to determine the objective and tasks of her research. The objective and tasks could be formulated more precisely and exhaustively.

5. Methods of the research

The accomplishment of the task, which is namely making an assessment in view of increasing the effectiveness in performing surgical interventions with lasers in the oral cavity, is achieved by executing three tasks:

1. On the first task a prospective randomized clinical trial (52 patients) was conducted, in which the author compares intra- and postoperative clinical parameters and subjective complaints of the patients undergoing frenulotomy of the upper lip, performed with diode (24 patients) or Er;Cr:YSGG laser (28 patients). The healing process is followed in both patient groups on the 7th and 14th postoperative day, as well as a month and a half after the operation. An assessment of the following parameters has been made: duration of the operative intervention, intraoperative bleeding, need for suturing, postoperative pain and need for taking analgetic medications, degree of fear and anxiety during the manipulation, assessment of the healing process – epithelization and formation of scar tissue, assessment of the ability to eat and speak after the intervention (on the 1st, 3rd, 5th and 7th day).

2. For the execution of the second task a clinical study has been conducted, in which the author follows intra- and postoperative clinical parameters and subjective complaints of 28 patients (aged 18-65 years) when performing apicectomy with Er;Cr:YSGG laser. In the patient inclusion criteria it could be more accurate to define the indications regarding the necessity of a surgical intervention for the periapical lesion, alongside the exhaustive potential of endodontic treatment/retreatment. With a clinical diagnosis of odontogenic radicular cyst it would be appropriate to describe that the material has been histologically verified. The effectiveness of laser surgery has been followed by assessing the healing process of wound surfaces after surgical treatment of chronic periapical processes with lasers based on different parameters: operative time, presence of discomfort during the intervention, postoperative pain, swelling in the nasolabial fold and upper lip on the 3rd and 7th day, hyperemia around the operative wound, degree of epithelization, volume of the bony cavity and bone density preoperatively, on the 3rd and 6th postoperative month.

3. For the implementation of the third task intra- and postoperative parameters and subjective complaints have been evaluated in patients treated for alveolitis with a diode laser. Included in the study are 36 patients in total, aged between 18 and 65 years. An assessment based on the following parameters is made: degree of pain on the 1st, 3rd, 5th and 7th day, presence of hyperemia around the extraction socket, degree of bone exposure, formation of new granulation tissue, presence of halitosis, epithelization of the socket on the 3rd, 5th, 7th and 14th day.

The clinical material, selected for the implementation of the main objective and tasks,

is sufficient for developing the dissertation, but it would be appropriate to include control groups for a more accurate determination of the effectiveness of laser surgery.

The following methods of research and analysis have been used for the execution of the set tasks:

– clinical-diagnostic, laboratory-diagnostic methods, questionnaires, statistical methods.

The methods, applied for developing of the set tasks, are well-selected and presented and have enabled the PhD student to obtain sufficient in quality and quantity, original and authentic results. The methods are contemporary, based on the good medical practice and correspond to the set objective and tasks.

6. Characteristics and assessment of the dissertation

The dissertation is written in 189 pages, illustrated with 70 figures and 69 tables. The bibliography contains 158 sources, all of which in English. Bulgarian authors have not been cited.

The work contains all of the necessary sections for a dissertation. The results are comprehensive and correctly described, the data of each parameter included in the study is thoroughly and exhaustively analyzed. The good illustration and competent approach of the PhD student when interpreting the obtained data makes an excellent impression.

The dissertation ends with conclusions based on the analysis of the results, discussion and summary.

A number of important conclusions for the clinical practice have been drawn, namely the established high effectiveness of lasers when performing frenulotomy in children due to the high levels of comfort, calmness and good cooperation, as well as low levels of postoperative pain; lasers provide an excellent control of bleeding, which completely eliminates the need for suturing; with Er,Cr:YSGG lasers, unlike the diode ones, minimal bleeding is possible, but the healing process is faster; in soft tissue laser surgical interventions the risk of developing a postoperative infection is minimalized, due to the bactericidal effect of laser radiation. The application of the Er,Cr:YSGG laser for bone removal in cystectomy and apicectomy promotes faster bone regeneration and is an effective means when operating on anxious, sensitive and uncooperative patients as the contactless work mode eliminates all unpleasant feelings of vibration, pressure and noise. This provides broader possibilities for operating under local anesthesia in such patients, however a disadvantage is the extended operative time. The treatment of alveolitis with LLLT with a diode laser provides very good control and significant reduction of the pain intensity, while at the same time accelerating the epithelization of the post-extraction socket, due to the biomodulating effect and the lack of mechanical obstacles like medications within.

7. Contributions and significance of the dissertation

The conclusions and contributions that have been drawn logically follow the results of the precisely conducted studies and are undoubtedly significant for the contemporary clinical practice.

8. Personal participation of the PhD student

The results of the conducted research and observations of patients and the ensuing conclusions and contributions in the dissertation are a personal work of the PhD student.

9. Author's summary

The author's summary completely corresponds to the contents of the dissertation, accurately reflects the accents and is developed according to the requirements of the LDASRB and the Regulations of MU – Varna.

The presented set of materials, related to the dissertation is complete and in accordance with the LDASRB and the Regulations for its application, as well as the Regulations of MU – Varna.

Conclusion

The chosen topic of the dissertation by Dr. Velimira Hristova Georgieva “Application of dental lasers for treatment of patients in oral surgery” reflects an actual and interesting issue for the field of oral surgery. The scientific work is well-structured, with correctly selected methods with authentic results and theoretical and practical contributions to dentistry. The research is actual, considering the constant search for new, contemporary, minimally invasive methods, offering maximal comfort to the patient intra- and postoperatively. This enforces laser treatment as a reliable alternative to some of the standard surgical techniques applied in oral surgery. The advantages of using lasers in the field (operations on soft and hard tissues) are mainly the decreased intensity and duration of postoperative discomfort, reduced healing period, improved perception of the intervention by patients, especially pediatric ones, due to the biostimulating effect of lasers and the faster wound healing, as well as the reduction of pain sensitivity. The dissertation demonstrates that laser treatment is a reliable, promising, contemporary method, which has its place in the daily ambulatory practice of oral surgeons.

The literature review is highly informative and concludes with a critical analysis and a clear motivation for the need to clarify the benefits of laser surgery for different interventions in the oral cavity and the need for analyzing the effectiveness of dental lasers in the three major aspects of their application in oral surgery – interventions on soft and hard tissues, as well as a biostimulating means.

The work fulfills the criteria for a dissertation, the data of the obtained results and their interpretation, as well as the presented publications related to it, I assume to be a personal deed of the author. Dr. Georgieva recognizes the contemporary specialized literature and **demonstrates** qualities and skills to independently conduct scientific research.

The dissertation contains original and scientific-practical contributions and covers the minimal criteria of the requirements of the Law for Development of Academic Staff in the Republic of Bulgaria (LDASRB) and corresponds to the specific requirements, accepted in relation to the Regulations of the application of the LDASRB and the Regulations of MU – Varna.

In conclusion: I give mu positive assessment of the dissertation work with the topic “**Application of dental lasers for treatment of patients in oral surgery**” and will vote „**IN FAVOR OF**” Dr. Velimira Hristova Georgieva acquiring the educational and scientific degree „**Doctor**” in the scientific specialty „**Oral Surgery**”.

Sofia, 05.06.2022

Statement by:

(Assoc. Prof. Elitsa Deliverska, DMD, PhD)

