

STATEMENT

Associate Prof. Angela Zdravkova Gusiyska PhD

**Department of Conservative Dentistry, Faculty of Dental Medicine, Medical University –
Sofia**

In accordance with order # P-2572/ 26. 07. 2024

of dissertation for awarding the educational and scientific degree "**Doctor**"

Professional field: **7.2 Dental Medicine**

Doctoral program: **Therapeutic Dental Medicine**

Author: Dr. Viktoria Todorova Dimitrova

Implementation form of the Dissertation: **Full-time PhD student**

Department: Operative dentistry and endodontics, Faculty of Dental Medicine, Medical
University - Plovdiv

Topic: "Biomechanical problems in endodontically treated teeth after removal of separated instruments"

Supervisor: Assoc. Prof. Dr. Silviya Dimitrova, PhD

Head of the Department "Operative dentistry and endodontics":

Prof. Dr. Neshka Manchorova-Veleva, DSc, FDM. MU Plovdiv

1. General presentation of the procedure and the researcher

Dr. Viktoria Dimitrova was enrolled in his dissertation as full-time training in Department "Operative dentistry and endodontics" FDM. MU Plovdiv with Supervisor: Assoc. Prof. Dr. Silviya Dimitrova, PhD FDM, MU-Plovdiv with the right of defense by order P-2492-24.07.2024.

The presented set of materials on paper / electronic media is in accordance with Article 115 (1) of the Procedure for awarding the educational and scientific degree "Doctor" in MU - Plovdiv and the Regulations of MU - Plovdiv, including all required documents. The dissertation is presented on 150 pages, illustrated with 87 figures, 4 tables and 4 appendices. The researcher has attached 4 full-

text publications and 3 scientific presentations . The presented bibliography covers 245 sources, 4 of which are by Bulgarian authors.

2. Brief biographical data about the doctoral student

Dr. Victoria Dimitrova was born on September 30, 1993. In 2012 completed her secondary education in the city of Burgas, High School for Romance Languages "Georgi Stoykov Rakovski". In 2018 completed his higher education at FDM, MU-Plovdiv, as a master's degree - doctor of dental medicine. Since 2020, she has been the manager of the Outpatient Clinic for an individual practice for primary dental care. In 2021, she was enrolled as a full-time Doctoral student at the Department of Operative Dentistry and Endodontics, FDM, MU - Plovdiv.

Dr. Victoria Dimitrova's research interests are focused on endodontics.

3. Relevance of the topic and advisability of the set goals and objectives

The relevance of Dr. Viktoria Dimitrova's dissertation work is undoubted, as contemporary endodontic practice poses a number of challenges to clinicians, one of which is the problem of maximal processing of the endodontic space and the associated separation of endodontic instruments. The various clinical approaches represent the modern search for an effective and minimally invasive approach to hard dental tissues, with evaluation and analysis focused on biomechanical problems in devitalized teeth after endodontic treatment and removal of a separated instrument.

Based on all these current problems in everyday specialized practice, the dissertation: "Biomechanical problems in endodontically treated teeth after removal of separated instruments" by Dr. Dimitrova examines, analyzes, and studies some of them.

4. Awareness of the problem

In the dissertation, Dr. Viktoria Dimitrova presents her in-depth knowledge of the problems related to endodontic treatment in cases of complications with separated endodontic instruments. The literature review is informative and analytical. The problems related to the occurring changes in the radicular hard dental tissues and the changes in the root canal morphology are presented in de-

tail. Methods are described and presented in detail, which enables a critical analysis of their advantages and disadvantages.

Considering the conservative treatment techniques, the possible risks of the left segment, simultaneously with the biomechanical problems related to the removal of hard dental tissues during the removal of the segment, and the subsequent possible complications after functional loading are related to the thorough preoperative endodontic treatment plan to choose the optimal approach for the specific clinical case.

5. Research methodology

The aim of the scientific work is to analyze biomechanical problems after the removal of separated endodontic instruments with different techniques and to explore possibilities for their prevention.

To achieve the goal, six main tasks are set, with tasks 1 and 4 each having two subtasks and task 5 having three subtasks. The first five tasks are related to the in vitro studies performed, and clinical task 6 explores the possibilities of minimally invasive removal of separated endodontic instruments with two different techniques.

The precisely set tasks also result in results, which are documented in detail through two— and three-dimensional image diagnostics and SEM photomicrographs. The results are subjected to strict statistical analysis; they are clear, specific, and well-illustrated through tables and graphs. Dr. Dimitrova presented the analysis to them accurately and analytically.

The results and the discussion of the tasks provide a correct direction for the precise formulation of ten specific conclusions.

6. Contributions and significance of the development for science and practice

The doctoral student formulated five contributions of an original nature and four contributions of a confirmatory nature, which confirms the significance of the scientific development. The contributions are in accordance with the realized tasks and the overall staging of the thesis project. Of the contributions of an original nature, the first two, which present the first in vitro comparisons made in our country in the changes in the volume and design of the root canal after removal of separated

endodontic instruments by ultrasonic technique and lasso technique, are undeniably impressive, proving statistically significant by less dentin removed when using the lasso technique, as well as the in vitro study performed on the application of endodontic guides to reach the endodontic face of the separated endodontic instrument, proving that the use of a guide leads to the removal of twice less dentin. For the first time in Bulgaria, a safe clinical protocol is being developed and offered for the application of ultrasonic technique for the removal of separated endodontic instruments, protecting against thermal and mechanical damage and based on thermometric research, as well as through EDX, it is proven that the ultrasonic technique for removal of separated endodontic instruments does not lead to changes in dentin composition. A safe time limit has been set for the application of the ultrasound technique in one root canal, which is also the basis of the created clinical recommendations for dentists - for precise preoperative analysis, the use of segmental radiography using a parallel technique and CVST is recommended; the recommended settings of the ultrasonic device when working in dry conditions are from 1 to 3 degrees; when moving the segment, its removal from the canal is facilitated by irrigation with 17% EDTA at a power setting no higher than level 5; for thermorelaxation of the tissues, an alternation of a two-minute work interval and a two-minute rest interval is carried out - the two-minute work interval consists of successive alternation of 10 seconds of ultrasonic activation and 10 seconds of rest; the total time of ultrasonic exposure should not exceed 40 minutes in one root canal.

7. Personal involvement of the PhD student

In her dissertation work, Dr. Viktoria Dimitrova shows mastery of a complex matter related to the protocol of removal of separated endodontic instruments, as well as her ability to analyze, interpret, and discuss the obtained results, draw the final conclusions, and correctly formulate the contributions of the dissertation work. All this confirms the personal work of the doctoral student. The participation of the scientific supervisor, who gives the guidelines for the implementation of the tasks set in the dissertation work, is also indisputable. The joint work of the Doctoral student in a team with collaborators proves the comprehensiveness of the set goal and the realized tasks.

8. Abstract

The abstract is written accurately and clearly and formatted according to the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria and the regulatory framework of the MU-Plovdiv. It reflects the research methods, the results achieved, a summary of the results, conclusions, and contributions. Publications related to the dissertation work are also presented. The abstract is presented on 64 pages, illustrated with 63 figures and 3 tables, accurately representing the dissertation work.

9. Conclusion

The dissertation contains scientific, scientifically applicable, and applicable results that make an original contribution to science and meet all the requirements of the Law for the Development of the Academic Staff in the Republic of Bulgaria (ZRASRB), the Regulations for the implementation of the ZRASRB, and the corresponding Rules of MU-Plovdiv. The presented materials and dissertation results fully correspond to the specific requirements of MU-Plovdiv.

The dissertation shows that the candidate for the PhD degree, Dr. Viktoria Dimitrova, possesses deep theoretical knowledge and professional skills in the scientific specialty of Operative Dentistry and Endodontics, demonstrating the qualities and skills for conducting independent research.

Based on the above, I give my positive opinion on the scientific research, achieved results, and contributions presented in the dissertation and the abstract. I will confidently vote positively and propose to the honorable scientific jury to award Dr. Viktoria Dimitrova with the educational and scientific degree of PhD in the PhD program of Conservative Dental Medicine.

Заличено на основание
Чл.5 §1, б. "В" Регламент (ЕС)2016/679

02/10/2024

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Assoc. Prof. Dr. Angela Gusiyska, PhD