



REVIEW

Associate Prof. Angela Zdravkova Gusiyska PhD

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

In accordance with order # P-32/11.01.2022

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

Professional field: 7.2 Dental Medicine

Doctoral program: Therapeutic Dental Medicine

Author: Dr. Bogomil Andonov

Implementation form of the Dissertation: Self-sufficient training

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

Topic: "Temporary restoration in multi-visit endodontic treatment – clinical and laboratory studies"

Supervisors: Associate Prof. Dr. Silviya Dimitrova PhD

Prof. Plamen Zagorchev PhD, DSc

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. Bogomil Ognyanov Andonov was enrolled in his dissertation in self-sufficient training according to order R-371 / 17.03.2021. He presents his completed dissertation by examining a problem that is extremely important for both general practitioners and for scientific researches in endodontics - temporary restoration in multi-visit endodontic treatment.

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 from 06.11.2014, including all required documents. The dissertation is presented on 182 pages, illustrated with 67 figures, 6 tables and 7 appendices. The researcher has attached 3 full-text publications. The presented bibliography covers 264 sources in English, 8 of which are by Bulgarian authors. More than 1/3 (43%) of the total number are from the last 10 years.

2. Brief biographical data about the doctoral student

Dr. Bogomil Andonov was born on December 31, 1980, in the town of Plovdiv. In 1999 he finished his high school education in Plovdiv at the High School with Humanitarian Profile "St. St. Cyril and Methodius ". In 2005 Dr. Andonov graduated from Medical University – Plovdiv, Faculty of Dental Medicine with "Master's Degree". In 2008 he was accepted as a full-time assistant professor at the Department of Operative Dentistry and Endodontics FDM, MU-Plovdiv, where he teaches to this day. He speaks English and Russian. In 2011 he completed his program for specialty in Operative Dentistry and Endodontics. Since 2011 he owns and manages "Dr. Bogomil Ognyanov Andonov AIPPADM" EOOD.

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

The aim is to evaluate the sealing ability of temporary restorative materials in multi-visit endodontic treatment and to study the characteristics of the cavity walls for optimal peripheral bond.

To achieve this, six main tasks are set, as Task 2 has three subtasks and Task 4 has two subtasks. The formulated tasks allow the set goal to be fulfilled:

Task 1: To investigate the opinion of dentists in Bulgaria on the materials for temporary restoration of endodontically treated teeth used in dental practice.

Task 2: *In vitro* microbiological study of the isolating properties of materials for temporary restoration of endodontically treated teeth.

Task 3: Evaluation and comparison of the permeability of electromagnetic radiation through experimental samples of three materials for temporary restoration (zinc oxide calcium sulfate, GIC and LCC) and HDT.

Task 4: Comparative study of the efficiency and changes in the volume of the endodontic cavity after removal of temporary restoration with three different methods: turbine and diamond bur, ultrasound with diamond tip and Er: YAG laser.

Task 5: *In vitro* SEM study of changes in the cavity dentin after removal of two materials for temporary restoration of the endodontic cavity (GIC and LCC).

Task 6: *In vivo* study of the possibilities for isolation of the endodontic cavity of two materials for temporary restoration (zinc oxide calcium sulfate and LCC) for different time periods.

4. Awareness of the problem

The various problems associated with this stage of endodontic therapy also define the importance of this scientific work. Dr. Andonov has managed to analyze the scientific literature and summarize current issues by grouping them into 6 main tasks, through which he experimentally and clinically emphasizes the existing problems, both in the experimental design

of some studies and the clinical significance of the effectiveness of the sealing period. A problem that has not been studied in details - the inhibitory effect of methylene blue on the contaminating potential of *S. mutans*. is analyzed as well as the possible leakage of Methylene blue dye in the contact area between the cavity wall and the temporary restorative material. Registration, comparison and evaluation of the remnants of material for temporary restoration by examination with naked eye, microscopic magnification and microscopic magnification and additional light source were performed. Changes in the volume of the endodontic cavity, duration and effectiveness of three different methods for removal of temporary restoration were studied. The results of the SEM studies of the degree of removal of materials for temporary restoration, show the presence of remnants on the walls of the cavity, which the author interprets in terms of the degree of adaptation and insulation.

Last but not least, it should be mentioned that the work was carried out under the supervision of Assoc. Prof. Silvia Dimitrova and Prof. Plamen Zagorchev, whose guidelines and advice gave the researcher the opportunity to set and successfully achieve the goal.

5. Research methodology

The desire to achieve long-term treatment without postoperative complications is associated with continuous laboratory and clinical monitoring for the presence of microbial infection and reinfection, as well as methods to complete and eliminate it. In the introduction, Dr. Andonov emphasizes the importance of temporary sealing of the endodontic space for the success of the treatment. In the literature review, which covers significant aspects of the problem, the author was able to present the importance of effective sealing and to present existing problems and studies in search of a universal method and material for temporary restoration of endodontically treated teeth. The separate groups of materials for temporary restoration are systematized, as well as their advantages and disadvantages. Problems in laboratory tests are also described - the presence or absence of dye penetration, which can hardly be accepted as the only criterion for the quality of the materials used; the physical characteristics of the dyes, which are associated with a high degree of penetration, are rare in the oral environment; bacterial contamination as a major factor in failure of endodontic treatment also could not be correctly compared with the results obtained. The formulated unsolved problems, which are the basis of the set tasks, are also important.

The use of temporary restoration for sealing the endodontic space raises some unsolved problems not only with the procedure of placement of the material and the period it remains in the cavity, but also with its effective removal in terms of the definitive obturation and isolation from the oral environment. As a result of the literature review it is established that the opinion of the dentists in Bulgaria regarding the methods and means for temporary restoration of

endodontically treated teeth has not been sufficiently studied. There is no approved methodology, as well as material for temporary restoration of endodontically treated teeth, with which to effectively isolate the endodontic space between visits. There are no established criteria for analyzing the quality of the peripheral bond of the material for temporary restoration of the endodontic cavity with hard dental tissues. There are no established methods for laboratory testing of the insulating properties of material for temporary restoration of the endodontic cavity, in which to avoid the inhibitory effect of dyes on the bacterial species used in different researches. There is no approved protocol for control over the removal of material for temporary restoration from the endodontic cavity before the post endodontic build up.

All these problems, formed as a conclusion from the literature review, represent an in-depth analysis of the literature used and are the basis for formulating the purpose and objectives of the presented work.

6. Scientific and practical contributions and significance of the work

The possibility of adequate sealing of the endodontic space in case of need for long-term treatment for 14 - 21 days or more has been clinically studied. The preparation of the experimental samples is described in detail in each task.

The developed work ends with recommendations to dentists, which definitely increases its value for everyday clinical practice.

Finally, Dr. Andonov formulates four contributions of a confirmatory and four of an original nature, which are the result of clearly set tasks, their accurate implementation and last but not least the value of scientific development.

7. Personal participation of the researcher

The desire to achieve long-term treatment without postoperative complications is associated with continuous laboratory and clinical monitoring for the presence of microbial infection and reinfection, as well as ways to eliminate it. In the introduction, Dr. Andonov emphasizes the importance of temporary sealing of the endodontic space for the success of treatment. In the literature review, which covers significant aspects of the problem, the author was able to present the importance of effective sealing and to present existing problems and studies in search of a universal method and material for temporary restoration of endodontically treated teeth. The separate groups of materials for temporary sealing are systematized, as well as their advantages and disadvantages. Problems in laboratory tests for sealing are also described - the presence or absence of dye penetration, which can hardly be accepted as the only criterion for

the quality of the materials used; the physical characteristics of the dyes, which are associated with a high degree of penetration, are rare in the oral environment; bacterial contamination as a major factor in failure of endodontic treatment also could not be correctly compared with the results obtained. The formulated unsolved problems, which are the basis of the set tasks, are also important.

8. Abstract

The abstract is written and formatted in accordance with the requirements of the Law on the Development of Academic Staff in the Republic of Bulgaria and the legislation of MU-Plovdiv and reflects the research methods, the attained results, discussion of the results, as well as conclusions and contributions. Publications related to the dissertation are also presented - three full-text articles and three scientific reports. The abstract is presented on 64 pages, illustrated with 47 figures and 1 table, accurately presenting the dissertation.

9. Conclusion

The dissertation meets all the requirements of the Academic Staff Development Act (ACAS), the Regulations for the implementation of the ACAS and the relevant Regulations of the Medical University - Plovdiv. The work shows that Dr. Bogomil Andonov has in-depth theoretical knowledge and professional skills in the scientific specialty "Operative Dentistry and Endodontics".

Based on the above, I give my positive assessment of the presented project of the dissertation. I recommend the esteemed members of the department council to vote positively and to award Dr. Bogomil Andonov the educational and scientific degree 'DOCTOR' in the doctoral program "Therapeutic Dental Medicine".

01.02.2022
Sofia

Assoc. Prof. Dr. Angela Gusiyska, PhD

