

**Review for educational and scientific degree "Doctor"**

**Review**

**by**

**Prof. Dr. Georgi T. Tomov, PhD.**

**Department of Periodontology and Oral Diseases, FDM, MU - Plovdiv**

Appointed by Order No. P-109-174/06.06.2024 as a member of the scientific jury in the procedure for the acquisition of the educational and scientific degree "**Doctor**" in the professional field of 7.2. *Dental medicine* in the doctoral programme "*Therapeutic Dentistry*"

**Author:** BORIS SASHEV VALKOV

**Form of doctoral studies:** full time PhD student

**Department:** Conservative Dentistry and Oral Pathology, FDM, MU-Varna

**Topic:** STUDY OF THE PROPERTIES OF TEMPORARY FILLING MATERIALS

**Scientific supervisor:** Assoc. Prof. Dr. Miglena Balcheva – Eneva, PhD

**1. General presentation of the procedure and the PhD student**

The review of the documents shows that the procedure for the doctoral student's enrollment and the procedure for the announcement of the defense have been followed, the documents have been prepared in accordance with the requirements of the Law on the Development of the Academic Staff of the Republic of Bulgaria, the Regulations for its application and the Regulations for acquiring educational degrees and occupying academic positions at the Medical University – Varna.

**2. Brief biographical data about the PhD student**

Dr. BORIS SASHEV VALKOV graduated in 2017 from the Faculty of Dental Medicine at the Medical University "Prof. Dr. Paraskev Stoyanov" - Varna, acquiring a Master's degree "Doctor of Dental Medicine". In 2018 he started working as a Ass. Prof. in the Department of Conservative Dentistry and Oral Pathology, and since September 2019 he has been a regular Ass. Prof. in the same department. From 09.2020 he is enrolled in a full-time PhD program on the topic "Study of the properties of temporary filling materials". He teaches the course "Conservative dentistry - pre-clinical and clinical". Regarding his dissertation work, the candidate has published 3 full-text articles (one in press).



### **3. Relevance of the subject matter and relevance of the set aims and tasks**

The treatment of dental caries and its complications sometimes requires a multi-stage approach, which can be the result of a number of reasons such as persistent infection or lack of time on the part of the patient or the dental practitioner. For optimal results, the filled cavity should be sealed between visits. Its sealing is achieved with temporary filling materials. The aim is to protect the pulpo-dentinal complex in the case of caries or to prevent the entry of microorganisms that could compromise an ongoing root canal treatment. In addition, these materials must meet a number of other requirements such as restoration of occlusal relationships and lost tooth function, without being toxic and allergenic.

A number of temporary obturation materials are available on the market, which differ in composition and properties. The choice of a specific temporary obturation material depends on various factors, that are not always known by dental practitioners. Therefore, the chosen topic is relevant, and the aim and tasks formulated to achieve it are appropriate.

### **4. Knowledge of the problem**

The literature review of the dissertation is developed in 55 pages and draws on 211 cited sources (9 in Cyrillic and 202 in English). In it, the PhD student gives a sequential brief overview of the topic, which includes a presentation of the objectives of temporary obturation materials, their main functions, their requirements, their clinical application in operative dentistry and endodontics, and the types of temporary obturation materials, as well as some problematic aspects, such as microleakage around temporary obturations, the influence of temporary obturation materials on cracks and fractures of hard dental tissues during endodontic treatment, sensitizing potential of temporary obturation materials. Factors influencing the choice of temporary obturation material and the difference between temporary and provisional restorations are presented.

The literature review concludes with an analysis that justifies the necessity of developing the dissertation topic. The literature review has a number of weaknesses, the most obvious being the absence in the list of literature used of the only Bulgarian dissertation of recent years related to the topic, namely "Temporary restoration in multi-visit endodontic treatment – laboratory and clinical studies", B. Andonov, Plovdiv, 2022.

### **5. Methodology of the study**

The goal is clearly formulated and the three tasks (tasks 1 and 2 have several subtasks) for its solution - logically selected and described. A sufficient amount of material is used to solve them. In the first task, the antibacterial properties of eugenol and zinc oxide, as part of the composition of a material for temporary obturation of endodontic cavity, are investigated by three different methods. In the second task, microleakage is investigated in three commercial temporary obturation materials on 30 freshly extracted human teeth over a period of 2 and 14 days. In clinical task 3, the sensitizing potential of temporary obturation materials is investigated on 724 patients. Data processing and analysis were performed with the IBM SPSS Statistics 20 statistical package.

The methods and the scheme of the studies are comprehensively described. The statistical methods used were correctly selected, which is a prerequisite for the reliability of the conclusions drawn.

### **6. Characteristics and evaluation of the dissertation**

The dissertation contains 165 standard pages and is illustrated with 34 tables and 55 figures. The bibliography consists of 211 sources, of which 9 are in Cyrillic and 202 are in Latin.



The dissertation begins with a literature review on the issue, which despite its length has a number of weaknesses and gaps. The review concludes with a brief 'analysis' that should link the discussed points on the topic to the aim and objectives formulated by the PhD student.

After formulating the aim and the three tasks (with sub-tasks), the PhD student presents in turn the materials and methods used in the thesis. The results of clinical, paraclinical and statistical studies obtained in the course of the tasks are correctly described and accompanied by well-structured tables, figures and appendices. Based on the results obtained from the three tasks and the conclusions drawn, it can be argued that one of the main drawbacks of temporary obturation materials is the increased levels of microleakage, the lowest being in the case of photopolymerising materials, but these in turn have a high potential for the development of cross-sensitivity between different acrylates and methacrylates in dental practice.

I believe that the results obtained in the development of this dissertation add to the existing knowledge on the disadvantages of temporary obturation materials and provide guidance for future developments in this direction. The discussion of the results and the comparison made between the data from the research and the analogous results found in the literature are logical and justified. The conclusions drawn are reliable and reflect to some extent the contributions of the developed work.

## **7. Contributions and significance of the dissertation for science and practice**

Two groups of scientific and applied contributions have been formulated - original and confirmatory. From the original contributions I accept only and consider the most significant for science and practice to be the studied sensitization to components of materials for temporary obturations.

## **8. Assessment of the publications on the dissertation**

In relation to his dissertation, Dr. B. Valkov has published three full-text articles. As the publications were made in the period 2022-2024, there is no evidence that they have been cited and their impact is yet to be assessed.

## **9. Personal participation of the PhD student**

The doctoral student's personal involvement in the work, the results obtained and the contributions formulated are beyond doubt. The allergological studies were performed in the specialized office at the university medical-dental center at the Faculty of Dental Medicine of MU-Varna by the PhD student in collaboration with his supervisor.

## **10. Abstract**

The presented abstract reflects in a synthesized form the structure and content of the dissertation.

## **11. Critical comments and recommendations**

The literature review does not fully reflect all the research on the topic and ignores studies done in Bulgaria in recent years. It would be useful to propose work based on the allergological studies conducted and to experiment on a new composition of material for temporary obturation.

## 12. Recommendations for future use of the dissertation contributions and results

I believe that Dr. Valkov can and should continue his future research on this topic. It is also important to continue organising information campaigns to maintain the interest of dental professionals in this topic and to inform more colleagues about the potential disadvantages and risks associated with the use of certain temporary obturation materials. This could take the form of a lecture to the continuing education programme of the FDM - Varna.

## CONCLUSION

The dissertation work has led to the achievement of **scientific and applied results that represent a contribution to science** and meets the requirements of the Law on the Development of the Academic Staff of the Republic of Bulgaria, the Regulations for its Application and the Regulations of MU – Varna. The presented materials and dissertation results **fully comply** with the specific requirements of MU - Varna.

The dissertation work shows that the PhD student BORIS SASHEV VALKOV possesses in-depth theoretical knowledge and professional skills, demonstrating qualities for independent scientific research.

Due to the above, I confidently give my **positive evaluation** for the conducted research, presented by the above-reviewed dissertation, abstract, achieved results and contributions, and I propose **the honorable scientific jury to award the educational and scientific degree "Doctor" to BORIS SASHEV VALKOV in the doctoral program "Therapeutic Dentistry"**.

26. 06. 2024

Reviewer: .....

Prof. Dr. Georgi T. Tomov, PhD.

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