

**TO THE CHAIRMAN AND MEMBERS
OF A SCIENTIFIC JURY
APPOINTED BY ORDER No. R-2444/16.07.2024
OF THE VICE RECTOR OF THE MEDICAL UNIVERSITY - PLOVDIV
BY COMPETITION FOR BORROWING OF
ACADEMIC POSITION "DOCTOR" IN
DEPARTMENT OF "PROSTHETIC DENTAL MEDICINE"
MEDICAL UNIVERSITY - PLOVDIV**

EXPERT OPINION

by Associate Professor Dr. Rangel Georgiev Todorov, Ph.D

Department of Prosthetic Dentistry

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of a Ph.D thesis for awarding the educational and scientific degree 'doctor'

doctoral program "Prosthetic Dentistry"

Author: Dr. Viktor Yordanov Hadjigaev

Form of doctoral studies: independent preparation

Department: "Prosthetic Dentistry"

Topic: "APPLICATION OF ENDOCOWNS AS A BRIDGE REINFORCEMENT"

Scientific leader: Associate Professor Stefan Zlatev, MD, Department of Prosthetic Dentistry,
Faculty of Dental Medicine, Medical University – Plovdiv

I. Presentation of the procedure

This opinion was prepared on the basis of order No. R-2444/16.07.2024 of Deputy. The Rector of the Medical University - Plovdiv on the basis of Article 4, para. 2 of the ZRASRB, in compliance with Article 30, para. 3 of the Regulations for the implementation of the ZRASRB of the Medical University - Plovdiv, on protocol No. 1 of the first meeting of the Scientific Jury under procedure and public defense of a dissertation work for the acquisition of the educational and scientific degree "Doctor".

The structure of the dissertation work submitted for review meets the requirements of the RASRB and the Regulations for its application in the Regulations of MU-Plovdiv and contains the subheadings: introduction, literature review, analysis of lit. overview, aim and tasks, own research - material and methods, results and discussion of the results, conclusions, contributions, bibliography, appendices. An abstract and the author's publications related to the dissertation work and its contributions are also presented.

II. Dissertation work

The dissertation submitted to me for the preparation of an opinion is presented in a total of one hundred and fifty-seven pages, which are distributed as follows - table of contents covering two pages, abbreviations used occupying one page, introduction in two pages, literature review spread over thirty-three pages, analysis of the literature review on three pages, the formulation of aim and objectives covers one page, material and methodology spread over twenty-two pages, results and discussion spread over forty-eight pages. The bibliography contains two hundred and forty-four sources, sixteen of which are in Cyrillic. The dissertation development is illustrated with six tables, seventeen diagrams and four appendices.

1. Relevance of the topic

The actuality of the developed problem is already formed in the introduction of the dissertation work, as the topic regarding the treatment of the defects of the integrity of the dental rows and the treatment with metal-free structures is touched upon. The choice of appropriate material and technique in the construction of severely damaged, endodontically treated teeth is a key problem for the dental practitioner, especially in cases where these teeth are used for retainers in bridges. New materials and new adhesive systems are in tune with the concept of minimally invasive intervention and preservation of the maximum amount of hard dental tissues.

2. Knowing the problem

The literature review clearly and consistently addresses the issue regarding the importance of endocrowns as a method of restoration of severely damaged endodontically treated teeth. Consistently and systematically, Dr. Hadjigaev considers pin constructions as also a suitable method of treatment, in great detail describe the materials, preparation design, which are key to the planning and treatment of dental crown defects. I consider the three tables and one diagram presented by the doctoral student to be a very appropriate illustration, which very well illustrate and show the correspondingly increasing publication activity on the subject under consideration, a separate table presents the clinical survival of pin restorations. Another table examines the clinical survival of endocrown-type restorations, and the final table details the ceramic materials that can be used.

Dr. Hadjigaev thoroughly and comprehensively describes the known designs of the preparation, additional methods for retention and retention of the endocrowns are considered, adhesive systems for making bridge structures are presented. The construction principles in the manufacture of CAD/CAM ceramic bridge prostheses are also examined in detail.

I believe that the volume, comprehensiveness and relevance of the literature review presented in this way is in itself a serious scientific contribution of Dr. Hadjigaev in the field of prosthetic treatment of endodontically treated teeth. In three pages, an accurate analysis of the literature review was carried out, describing the fully clarified, insufficiently clarified and unresolved scientific questions that logically lead to the selection of a goal and the tasks to it.

3. Material and Methodology

The purpose and resulting tasks are clearly and accurately formulated, correspond to the title and content of the dissertation development.

Task #1. To study, through a survey method, the awareness of dentists about the application of the endocrown in dental practice.

Task #2. To investigate the area of the prepared surface (the area of non-bonding) in two preparation designs – classic and endocrown with a circumferential threshold.

2.1. Creation, testing and validation of a method for measuring the area of a complex geometric object.

2.2. Examination of differences in adhesive bonding area in the two preparation designs.

Task #3. To study the fracture resistance of three-member bridge structures made of zirconium dioxide ceramics.

Task #4. To make a clinical evaluation of metal-free three-unit bridge structures with different distal bridge fasteners - conventional crown and endocrown.

The material of the conducted research is completely sufficient for deriving statistically reliable scientific results. For the purposes of the dissertation development, 228 surveys among dentists, 15 test units - extracted teeth, phantom models were created in connection with various types of edentulization, as well as 66 patients.

All used research methods allow solving the set goal and tasks in the dissertation work.

The researched material, as well as the methods applied for the purpose, are a prerequisite for obtaining reliable scientific results.

4. Characterization and evaluation of the dissertation work and contributions

The results obtained on all four tasks are reliable, correctly statistically processed and comprehensively presented in the dissertation. All of them have a marked scientific and applied character.

In the discussion of the results, a comparative analysis was carried out with similar scientific studies of other authors, and the reasons for the difference or coincidence of the established data were highlighted. The results that are the contribution of the doctoral student and are important in scientific and applied terms are highlighted.

The contributions of the dissertation are of an up-to-date, confirmatory and scientifically applied nature.

As the most significant contributions of scientific development, I can point out the following:

- Creation of a digital protocol for determining the area of objects with an irregular shape, teeth, dental stumps, prosthetic structures;
- Creation of a methodology for measuring the differences in cementation area between conventional and endocrowns;
- Creation of a methodology for the production of uniform "macro" experimental samples - three-member bridges, with the possibility of a controlled change in one parameter - e.g. bridge body/bridge brace connection size, preparation design
- Metal-free MCs made of ceramics based on ZrO₂ have sufficient fracture resistance to be used in the distal region of the tooth arch;
- The successful application of bridge structures made of fiber-reinforced laboratory composites as long-term structures in the distal part of the dentition was confirmed;

- It was confirmed that the distal joint is the site with the most frequent fractures in metal-free constructions;

5. Assessment of the publications and personal contribution of the doctoral student

Publications and participation in scientific forums related to the dissertation represent the most essential parts of the dissertation work.

Full text publications:

- 1.Hadzhigaev V, Zlatev S, Apostolov N, Kazakova R, Yankova M, Todorov R. Use of endocrowns in everyday practice - a survey. *Dental Medicine*. 2021;103(1):20–25.
- 2.Hadzhigaev V, Zlatev S, Manchorova N. Clinical evaluation of tree-unit FPD with endocrown preparation of the distal abutment tooth. *J of IMAB*. 2017Oct–Dec;23(4):1773–1777.
- 3.Zlatev S, Kissov C, Hadzhigaev V, Hristov I. Natural language processing as a method for evaluation of factors influencing smile attractiveness. *J of IMAB*. 2017Oct–Dec;23(4):1784–1789.

Participation in scientific forums:

- 1.Hadzhigaev V, Manchorova-Veleva N, Zlatev S. Stress distribution in FPD with endocrown a 3D FEA study. In: 2012 IADR/LAR General Session. Iguacu Falls, Brazil: IADR; 20–23.
- 2.Hadzhigaev V, Manchorova N, Zlatev S, Kalachev Y. One-year clinical evaluation on conventional and endo-crown retained three-unit FPDs. Pilot study. In: Continental European and Scandinavian Divisions Meeting of the IADR (Antalya, Turkey). Antalya, Turkey; 2015.
- 3.Hadzhigaev V, Zlatev S, Manchorova N, Kalachev Y. A survey of dentists on the application of endocrowns in their daily clinical practice. In: *Folia Medica*. Suppl. 1. 2015

6. Abstract

The abstract meets the requirements, is divided into sections and covers a volume of fifty-nine pages and reflects in abbreviated form the main results and contributions achieved in the dissertation development. The author's publications in connection with the dissertation are also indicated in the abstract.

III. Critical remarks and recommendations

I have no critical remarks about the Ph.D thesis, abstract and scientific research conducted by Dr. Hadjigaev.

IV. CONCLUSION

The structure of the dissertation submitted to me for review fully meets the requirements for such a scientific development, as it structurally contains all the necessary parts - introduction, literature review, analysis of the literature review, aim and objectives, own research - material and methods, results and discussion of the results , conclusions, contributions, bibliography and appendices.



The dissertation contains scientific, scientific-applied and applied results, which represent an original contribution to science and meet all the requirements of the Law on the Development of Academic Staff in the Republic of Bulgaria (ZRASRB), the Regulations for the Implementation of ZRASRB and the Regulations of the Ministry of Education - Plovdiv. The presented materials and dissertation results fully correspond to the specific requirements adopted in connection with the Regulations of the Ministry of Education - Plovdiv for the application of the ZRASRB.

The dissertation shows that the doctoral student Dr. Hadjigaev possesses in-depth theoretical knowledge and professional skills in the scientific specialty "Prosthetic Dental Medicine", demonstrating qualities and skills for independent conduct of scientific research. Fortunately, I also have personal observations of the candidate's skills in the given scientific field and beyond the dissertation development. These observations confirm my current opinion.

As a result of the examined dissertation work, abstract, achieved results and contributions, I give my positive assessment and will vote categorically with YES for the awarding of the educational and scientific degree "doctor" for the conducted scientific research of Dr. Viktor Yordanov Hadjigaev.

29.08.2024

Sofia

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

Assoc. Prof. Dr. Rangel Georgiev Todorov, Ph.D