

REVIEW

from

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Appointed, by order No. R-109-393/07.09.2023, as a member of a scientific jury under the procedure for obtaining the educational and scientific degree "**PhD**" in a professional direction 7.2. *Dentistry* in a doctoral program "*Therapeutic dentistry*"

Author: *Tsvetalina Ivanova Gerova-Vatsova*

Form of doctoral study: regular form of study

Department: Periodontology and Dental Implantology, FDM at the Medical University - Varna

Topic: *STUDYING THE RESULTS OF THE APPLICATION OF AUTOGENOUS PLATELET-RICH PLASMA IN THE REGENERATIVE THERAPY OF VERTICAL BONE DEFECTS*

Scientific supervisor:

PROF. DR. STEPHAN VASILEV PEEV, D.M.N.

1. General presentation of the procedure and the doctoral student

The review of the documents shows that the procedure for finishing the doctoral student's education and the procedure for announcing the defense have been followed, the documents have been prepared in accordance with the requirements of The Law on academic staff development in the Republic of Bulgaria, the Rules for its application and the terms and procedures for acquiring scientific degrees and occupying academic positions at the Medical University of Varna.

2. Brief biographical data of the PhD student

Dr. TSVETALINA IVANOVA GEROVA-VATSOVA graduated in 2017 from the Faculty of Dental Medicine at the Medical University "Prof. Dr. Paraskev Stoyanov" - Varna, obtaining a master's degree "Doctor of Dental Medicine". In the same year, she started working as a full-time assistant in the Department of Periodontology and Dental Implantology, and from 01.06.2023 she is an Administrative Assistant in the same department. In 2023, she acquired a specialty in Periodontology and diseases of the oral mucosa. In connection with the dissertation, the candidate has published **5 full-text articles**.

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

The relevance of the topic developed in the dissertation is beyond any doubt.

Over the years, the development and implementation in practice of advanced biomaterials has significantly improved the results of the application of regenerative therapy of vertical bone defects in periodontal surgery. Barrier membranes of various composition and structure, bone-restorative materials, various growth factors and their combinations are used today. Along with already established xenogenic biomaterials, autogenous bioactive materials such as platelet-rich plasma (PRP) are also widely used.

However, there are also many controversies caused by the advantages and disadvantages of the different biomaterials with which platelet-rich plasma is combined, and hence the need for further research on the results of the application of autogenous PRP in the regenerative therapy of vertical bone defects, both alone and in different combinations.

In this way, the set goal and the formulation of the tasks for its achievement are appropriate.

4. Knowledge on the problem

The literature review for the dissertation is concise, although it is based on 396 cited studies. In six chapters, the dissertation examines successively all the main problems such as the regenerative therapy of vertical bone defects in periodontitis, as well as the materials for its implementation - barrier membranes (non-resorbable and resorbable), bone-restorative materials (autogenous, allogeneic, xenogenic and alloplastic), autogenous platelet-rich plasma (PRP) and enamel matrix derivatives (EMD). A special place is allocated to application of CBCT in periodontology, as the main paraclinical method used by the dissertation student in the development. It can be concluded that Dr. Gerova-Vatsova is well acquainted with the problem.

5. Research methodology

The goal is clearly formulated, and the three tasks (with two sub-tasks) for its resolution are logically selected and described. A sufficient volume of clinical material was used to solve them (48 cases were included out of a total of 30 male and female patients, randomly divided into four groups). The first group includes vertical bone defects, where regenerative therapy with autogenous, platelet-rich plasma will be carried out. The second group includes vertical bone defects, where regenerative therapy with enamel matrix derivatives will be carried out. A third group includes vertical bone defects where guided tissue regeneration will be performed with only a barrier membrane. The fourth group includes vertical bone defects, where guided tissue regeneration with a barrier membrane and autogenous, platelet-rich plasma will take place. A three-dimensional X-ray image of each patient was taken using a cone beam tomograph to locate and measure the parameters of all vertical bone defects just before the regenerative therapy. For the performance of the tasks, a comparison is made of the vertical bone defects (clinical and paraclinical) just before and 6 months after performing regenerative therapy. The statistical processing of the results shows that in all studied patients from the four groups, a statistically significant acquisition of a clinical level of attachment and a statistically significant reduction of the distance from the CEJ to three reference points of the bone defect (CBCT indicators "A", "B" and "C").

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

6. Characterization and evaluation of the dissertation work

The dissertation is written on 230 standard pages and is illustrated with 93 tables, 86 figures, 3 equations and contains 26 appendices. 396 literary sources are cited, of which 6 are in Cyrillic and 390 are in Latin.

The dissertation begins with a literature review on the problem that is competently written and informative. The review relates the debatable points in the application of autogenous bioactive materials such as platelet -rich plasma (PRP) to the goal and objectives formulated by the Ph.D.

After formulating the objective and the three tasks (with two subtasks), the dissertation student presents in sequence the materials and methods used in the dissertation work. The results of clinical, preclinical and statistical studies obtained during the implementation of the tasks are correctly described and accompanied by well-structured tables and figures (some of which represent photographic material).

I believe that during the development of the dissertation, sufficiently significant results were obtained, the nature of which can be defined as the enrichment of existing knowledge about the application of different bioactive materials (individually and in combinations) in regenerative therapy of vertical bone defects. The discussion of the results has a synthetic character and reveals the logical connection between them. A comparison was made between the data from the own research and the analogous results found in the literature sources. The conclusions drawn are reliable and largely reflect the contributions of the developed work.

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

Three original contributions and four of a confirmatory nature have been formulated, which I accept. Among the original contributions of the dissertation is a first-of-its-kind study of the effectiveness of application-guided tissue regeneration with a barrier membrane and autogenous platelet -rich plasma in vertical bone defects. For the first time, clinical and CBCT outcomes of autogenous platelet -rich plasma (PRP) and enamel matrix derivatives (EMD) alone, as well as barrier membrane administration alone and barrier membrane and autogenous platelet -rich plasma (PRP) are compared in regenerative therapy of vertical bone defects.

8. Assessment of dissertation publications

In connection with her dissertation work, Dr. Gerova- Vatsova has published five full-text articles in English. Since the publications were made in the period 2019-2023, there is no evidence that they have been cited and their impact is yet to be assessed, but considering the topicality of the topic, I assume that they will attract the attention of a specialist audience.

9. Personal participation of the doctoral student

The personal involvement of the doctoral student in the work, results obtained and the contributions formulated are without doubt. All clinical studies and interventions were performed on the basis of The University Medical and Dental Center at the Faculty of Dental Medicine of the MU-Varna during the period from August 2022 to July 2023. by the PhD student.

10. Abstract

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

11. Critical remarks and recommendations

Since the doctoral study has certain time constraints that do not allow to observe and analyze the patients included in the study for a longer period of time, some of the conclusions may undergo corrections. In this sense, I recommend Dr. Gerova-Vatsova to continue her observations on the same patients, as well as to publish periodically updated data.

12. Recommendations for future use of dissertation contributions and results

I think that the doctoral student T. Gerova-Vatsova, who demonstrated in her dissertation work a really good knowledge of the basic methodological tools necessary for the analysis of such a topic, can and should continue her future research in this direction. I consider the most important contribution of her work to be the comparison (clinical and CBCT) of the results of sole-administration of autogenous platelet -rich plasma (PRP) and enamel matrix derivatives (EMD) in regenerative therapy of vertical bone defects. Very important for the popularization of this valuable work for periodontology is the active informing of colleagues, which can be in the form of a lecture/practical course to the continuing education program of BgDA.


CONCLUSION

The dissertation work and its *scientific-applied results represent an original contribution to science* and **meet all** the requirements of the Development of Academic Staff in the Republic of Bulgaria Act (DASRBA), the Regulations for the Implementation of DASRBA and the relevant Regulations MU - Varna. The presented materials and dissertation result **fully** correspond to the specific requirements of the MU - Varna.

The dissertation shows that the doctoral student Tsvetalina Ivanova Gerova-Vatsova **possesses** in-depth theoretical knowledge and professional skills, **demonstrating** the qualities of independent conduct of scientific research.

Due to the above, I confidently give my *positive assessment* of the conducted research, presented by the above-reviewed dissertation work, abstract, achieved results and contributions, and *propose to the honorable scientific jury to award the educational and scientific degree "PhD"* to Tsvetalina Ivanova Gerova-Vatsova in the "Therapeutic Dentistry" doctoral program.

02. 11. 2023

Reviewer: 
Prof. Dr. Georgi T. Tomov, PhD