

To the Chairman of the Scientific committee,
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Of the Rector of the Medical University – Varna

STATEMENT

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Subject:

The defence of a PhD thesis for acquiring educational and scientific degree "Doctor" on the topic: " Investigating the role of marginal adaptation of indirect restorations as a plaque retentive factor and its influence on the attachment level"

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Dr. Sabina Plamenova Keremedchieva was born in 1992. She completed her higher medical education at MU-Varna in 2018. Her academic career began in 2018, initially as a part-time assistant, and subsequently she was assigned as a regular assistant at the Department of Periodontology and Dental Implantology in the discipline of Periodontology and ZOL. In 2020 she was enrolled for a free doctorate on the topic " Investigating the role of marginal adaptation of indirect restorations as a plaque retentive factor and its influence on the attachment level". Currently, she specializes in Periodontology and Diseases of the Oral Mucosa. She is fluent in English and Russian.

The presented thesis complies with the requirements for acquiring the scientific and educational degree "Doctor" of MU – Varna. It has a total volume of 209 pages, and is illustrated by 118 figures, 99 tables, 8 appendices, distributed as follows:

1. Introduction – 2 pages
2. Literature review — 37 pages
3. Objective and tasks — 1 page
4. Material and methods — 31 pages
5. Results and discussion — 72 pages
6. Conclusion — 2 pages
7. Conclusions — 1 page
8. Contributions — 1 page
9. Bibliography — 32 pages
10. Annexes — 21 pages

Relevance of the topic

Restoration of vital teeth with significant destruction of hard tooth tissues is still a serious challenge for dentists due to the high requirements in terms of abrasion resistance, fracture resistance, polymerization contraction, biological tolerance. One of the possible solutions is indirect restorations, with preference given to aesthetic ones. They could be manufactured from composite and ceramic materials, recently the preference been given for the composite

ones, as ceramic materials are expensive, brittle, non-fracture resistant and have a potentially high abrasive effect on natural antagonists. Recently digital technologies gradually took an important place both in the stage of impression taking of the operative field and in the process of manufacturing of indirect restorations. The long-term success of restorations depends not only on the requirements listed above but also on their marginal adaptation. The appearance of a marginal gap leads to micro leakage and retention of plaque in this zone. In turn, this causes secondary caries, postoperative sensitivity, irritation of the dental pulp, the appearance of diseases of the periodontium.

There is a variety of laboratory and clinical studies in the literature on the advantages and disadvantages of these technologies and materials, but the data are still incomplete, and in some cases contradictory. This determines the relevance and significance of the topic chosen by the dissertator and her supervisors.

Understanding of the problem – a literature review

The literature review is consistently structured, presenting the defects of the dental crown; direct composite materials and some of the problems in their application in cases with significantly destroyed teeth (realization of adhesive bond and polymerization shrinkage); indirect restorations, impression techniques, materials for fabrication and cementation; marginal adaptation and microleakage; influence of plaque retentive factors on the onset and development of periodontitis. Unfortunately, however, the review is mainly narrative, and these topics are not discussed thoroughly, but rather listed. The problems of direct restorations and their adhesion leading to the preference of indirect ones are vaguely presented, the different types of materials for indirect restorations and the problems associated with them are also not discussed. This leads to a lack of justification of the reason for selection of the two materials studied (lithium disilicate ceramics and hybrid ceramics). Regarding the impression taking methods, the digital ones are discussed in more details, but it would still be good to pay attention to the fact that there are some difficulties and problems with them too. In the description of the hybrid technique, the influence of the type of composite on the adhesion in the region apically from the cemento-enamel junction has not been considered. The use of glass-ionomers to cement the indirect restorations is also not well discussed.

Despite the good selection of the topic, the review is not convincing enough.

Purpose and objectives

The aim is " To determine the influence of different methods on the precision of indirect restorations and the clinical attachment level in the respective area". Three tasks are set for its implementation – in vitro study of the marginal adaptation of indirect restorations, in vitro study of micro leakage and a clinical follow-up for a period of 6 months of the clinical level of attachment in patients with direct (composite fillings) and indirect (ceramic inlays) restorations class II (MO/DO/MOD) with gingival floor positioned subgingivally.

Material and methods.

Regarding the first task, I have the following remarks:

From the presented description it is difficult to understand how many samples are studied and the numbers in the groups. 40 sections are described as being used. Given the fact that the methodology states that the teeth are "cut in a medio-distal direction through the middle of the restoration", I suppose that 20 teeth have been restored. There are eight groups, so each

group has 2.5 teeth? The question arises how is half a tooth in one group and the other half in another? Or is there an error in the description of the methodology, which, however, is repeated in the second task? What is the statistical reliability of the reported results, given the number of studied objects – 2.5 teeth (5 cuts) per group, in eight groups?

While describing the hybrid technique with application of Estelite bulk fill flow photo composite (Tokuyama Dental) there is no mentioning of an adhesive protocol. Was an adhesive system used or was the composite material directly applied?

Regarding the second task I have the same remarks as on the first, and in addition I would also mark that it is not clear whether the same teeth (cuts) are used in both tasks – everything so far with the use of fuchsin is absolutely the same.

In the third task there are described 5 groups – one control, with 10 direct composite restorations and four groups with indirect restorations. On the thirty-sixth page, however, it is described: "In Group 5, 6, 7, 8 for the implementation of a hybrid technique, lifting of the gingival base (CMR) with application of the composite Estelite bulk fill flow (Tokuyama Dental) was performed." What does 6, 7 and 8 groups include?

According to the described sequence of the methodology in the third task, when preparing the direct restorations, a lifting of the gingival floor is first made (point 4 – pages 35 and 36), the level of clinical attachment is measured and then a direct composite restoration is made (point 8 page 37). What is the reason to do the preparation in two stages (lifting the gingival foundation, measuring attachment, and then building) instead of making the procedure one-stage? Both materials used are direct composites.

Groups 6,7 and 8 appear again on page 39.

In addition, very large part of the description of the methodology is just a repetition of one and the same (pages 47 and 57, pages 48 and 58; pp. 50 and 60, etc.). It would be more appropriate simply to note that the methodology is similar to that of the previous task, as this creates the impression of simply searching for the volume of dissertation, without having anything essential to say.

Also, given the fact that in this task we have a study of a biological subject, there is the question of whether a follow-up duration of 6 months is sufficient.

The **results and discussion** take up 72 pages. On these pages there are a total of 118 figures and 97 tables. The large number of tables and figures and the relatively small amount of text are remarkable. The actual discussion of the results covers 6 pages (2 pages on task 1, 2 pages on task 2 and 2 pages on task 3), which, having in mind that the whole work is 155 pages, excluding the bibliography, raises the question of how thoroughly the subject has been studied.

The **conclusion** summarizes and highlights the more important results - no statistically significant differences in marginal adaptation between hybrid ceramic and lithium disilicate inlays are reported; Composite cement demonstrated statistically significant better results than GJC in cementing ceramic inlays; In terms of clinical level of attachment, indirect restorations fabricated by classical technique followed by direct obturation with composite demonstrated the best result.

The dissertation draws nine **conclusions**. Conclusions 1 and 2 (Most patients who participated in the clinical study were in the age range 40-50 years; The teeth sampled for the clinical study,

according to their type, molars and premolars, were almost evenly distributed, with 52% being premolars and 48% being molars) I could not accept, since the age range of the patients and the distribution of the teeth sampled was due to patient selection and not due to the influence of the different methodologies on the precision of the indirect restorations and the clinical level of attachment in the area concerned. Conclusions 8 and 9 overlap in meaning. The remaining conclusions are moderate, consistent with the stated objectives, and successfully summarize the results of the work.

The bibliography covers 283 sources, of which 15% are from the last 5 years and 43% are from the last 10. There are cited only two Bulgarian names and having in mind that lately there are several studies on the topic in our country, including dissertation thesis, I believe at least some of them should be included. This will help make the discussion more profound and detailed.

Considering the above, I could conclude that the thesis needs serious corrections.

Заличено на основание чл. 5,
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Member of the Scientific committee.

/ Assoc. prof. Mirela Marinova, PhD/

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