OPINION

by

Assoc. Prof. Dr. Ivan Lulchev Chenchev, PhD, Department of Oral Surgery, Faculty of Dental Medicine, Medical University of Plovdiv, Chairman of the Scientific Jury, designated by Order No **P-1277/ 03.08.2020** of the Rector of the Medical University of Plovdiv, and Minutes No. 1/ **04.08.2020**

In regard with: Dissertation themed **SUPERNUMERARY TEETH – EPIDEMIOLOGICAL, CLINICAL AND RADIOLOGICAL STUDIES** for awarding **doctoral degree** in a doctoral program in Oral Surgery, professional field **7.2. Dental Medicine**, sphere of higher education: **7. Healthcare and Sports.**

Author: Dr. Radka Borisova Cholakova, self-training PhD student at the Department of Oral Surgery of the Faculty of Dental Medicine at the Medical University of Plovdiv.

Academic supervisor: Assoc. Prof. Dr. Deyan Zdravkov Neychev, PhD

1. General presentation of the procedure and the doctoral candidate

The presented set of materials in paper and electronic form is in accordance with Art. 115 (1) of the Procedure for Awarding Doctoral Degrees set in the Regulations of the Medical University of Plovdiv.

The doctoral candidate enclosed 4 publications in connection with the results of the dissertation and 4 scientific communications.

2. Biographical notes of the doctoral candidate

Dr. Radka Cholakova was born in 1978. She completed her secondary education in 1995. She graduated in 2001 from the Faculty of Dental Medicine at the Medical University of Plovdiv. In 2005, after winning a competition, she was appointed as an assistant professor at the Department of Oral Surgery of the Faculty of Dental Medicine. In 2006, she acquired specialty Oral Surgery, and in 2019, she was enrolled as a self-training PhD student at the Department of Oral Surgery of the Faculty of Dental Medicine - Plovdiv.

3. Significance of the theme and appropriateness of the objectives and tasks set

The problem addressed in the dissertation is significant from a theoretical and clinical point of view. The objective is stated clearly, the tasks were selected correctly and were implemented using modern methods.

4. Knowledge on the problem

In her dissertation, Dr. Radka Cholakova demonstrates theoretical knowledge of the theme and skills for conducting independent research. The exposé is structured properly. The literature review covers the problems associated with the dental abnormality supernumerary teeth. It is presented on 30 pages and is illustrated with 1 table. A comprehensive review of the literature on the embryology of the maxillofacial region and the etiological hypotheses for the development of supernumerary teeth, the classification and clinical presentation of supernumerary teeth, and the paraclinical approaches used in their diagnosis was made. The complications caused by untreated hyperdontia are addressed, as well as the treatment approaches used in hyperdontia.

The literature review ends with an analysis and stating the unresolved issues on the topic.

The objective of the dissertation of Dr. Cholakova is *"to study the frequency of supernumerary teeth and their effect on the dentition and to develop an algorithm for management of hyperdontia"*. It is clearly and precisely stated.

The implementation of the objective was achieved through carrying out four tasks, with the second task divided into 2 subtasks.

5. Methods

For Task 1, 1,000 patients meeting certain inclusion and exclusion criteria were examined for a period of one calendar year. The ethnic variability of hyperdontia among the studied patients by ethnic groups living in the city of Plovdiv was studied.

Task 2 was divided into two subtasks, and Dr. Cholakova examined the influence of untreated hyperdontia on the eruption of the adjacent permanent teeth as well as the development of adjacent teeth by assessing the presence and degree of dilaceration, resorption of the root of the permanent tooth, pulp blood supply, caries and its complications. To carry out both subtasks, 106 patients diagnosed with 168 supernumerary teeth were examined. Subtask 1 examined the stage of eruption of the teeth adjacent to the supernumerary tooth, as well as the changes in the arrangement of the teeth in the dental arch. In Subtask 2, an assessment of the presence and degree of dilaceration, the presence and type of resorption of the adjacent permanent teeth, the changes in the pulp blood supply as well as the development of caries of the adjacent teeth and its complications was made. The doctoral candidate used a new method for studying the perfusion of pulp vessels based on the Doppler effect of laser radiation, which allows detection of changes, even in teeth with incomplete root development. The methodology allows detecting changes in the blood flow of the adjacent teeth much earlier. Routine and modern radiological methods were used for examining the effect of the supernumerary teeth on the adjacent teeth.

For Task 3, 32 patients with supernumerary teeth, with indications for extraction, were included. To assess the impact of surgery on the teeth adjacent to the supernumerary tooth, the stage of development of the teeth adjacent to the supernumerary tooth was examined. The results of the periodically performed laser Doppler flowmetry of the adjacent teeth on day 15, and months 3 and 6, were analysed. The stage of eruption of the permanent adjacent teeth, 6 months after the extraction of the supernumerary tooth, was monitored. Changes in the arrangement of the teeth in the dental arch without an orthodontic procedure after the surgical procedure were also described. Surgical procedure was analysed by recording the type of analgesia, surgical access, incision, sutures used, drainage and postoperative pain management. The influence of the extraction on patient's psycho-emotional status was studied by assessment of anxiety on the FLACC scale and self-assessment of pain using the Wong-Baker FACES scale. The subjective complaints and objective complications of the surgical procedure were analysed.

In Task 4, an algorithm for management of supernumerary teeth was developed and the optimal time for surgical treatment was defined. The algorithm developed specifies the most appropriate period in which the extraction of the supernumerary tooth causes least complications.

6. Characteristics and evaluation of the dissertation

Dr. Cholakova presented a properly structured dissertation, containing all the basic components.

The dissertation was written on 141 pages (without the appendices), and it contains 12 tables, 34 figures, 57 diagrams and 37 appendices. The bibliography includes 176 references.

Own research and discussion are presented on 66 pages, and the results are correctly described, analysed and interpreted. Based on the results obtained, Dr. Cholakova found that ST are a dental abnormality, which is found relatively rarely in our population, they occur mainly in the mixed dentition and their distribution by sex corresponds to the frequency in Caucasians. Hyperdontia affects predominantly the maxilla and is more common in males. Injury and heredity were not confirmed as a reason for the development of hyperdontia. The relative proportion of orthodontic changes caused by ST in early childhood is the greatest. The different morphology of the supernumerary teeth results in certain orthodontic changes and delay in the eruption of the permanent tooth due to a discrepancy between the medio-distal dimension of the crown of the tooth with delayed eruption and the intercrown distances of the adjacent teeth. The possible complications due to supernumerary teeth give grounds to recommend that patients with hyperdontia should be treated as early as possible after diagnosis. The studies on anxiety and pain in patients during the surgical procedure demonstrate that, with a prior explanation of the upcoming procedure, children tolerate the procedure normally, and, therefore, general

anesthesia is not needed, except in highly anxious patients.

The dissertation ends with eight conclusions, based on the results, discussion and critical analysis.

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

The dissertation of Dr. Cholakova *Supernumerary Teeth – Epidemiological, Clinical and Radiological Studies* makes original contributions to dental practice. I believe that the dissertation will contribute to solving problems related to hyperdontia and determining the optimal time for its treatment.

8. Assessment of publications related to the dissertation

Four publications were presented, which do not reflect sufficiently the results and methods used in the dissertation. Of the scientific works presented, there are two articles presenting clinical cases, one presenting literature review and one - an epidemiological study. There are no scientific participations of the doctoral candidate showing the results on the theme of the presented dissertation.

9. Personal involvement of the doctoral candidate

The presented dissertation is a personal work of Dr. Radka Cholakova. The research was carried out by the author, interpretation of the data and defining the contributions and the results were implemented by the doctoral candidate.

10. Author's summary

The author's summary was prepared in accordance with the requirements of the Act for the Development of the Academic Staff in the Republic of Bulgaria and the regulations of the Medical University of Plovdiv.

11. Critical comments and recommendations

The main part of the presented scientific publications and participations of the doctoral candidate are not related to the results on the theme of the presented dissertation.

CONCLUSION:

The dissertation presented by Dr. Radka Cholakova meets the minimum requirements set in the Act for the Development of the Academic Staff and its Implementation Rules as well as in the regulations of the Medical University of Plovdiv.

After the analysis and critical notes made, I give my positive opinion on the dissertation themed *Supernumerary Teeth – Epidemiological, Clinical and Radiological Studies*, and I will cast my POSITIVE VOTE for awarding DOCTORAL DEGREE in the scientific speciality Oral Surgery to Dr. Radka Borisova Cholakova.

11 Aug 2020

Signature:

(Assoc. Prof. Dr. Ivan Chenchev, PhD)