

## STATEMENT

about a dissertation on a topic

“MINIMALLY INVASIVE EXTENDED ORBITAL APPROACH FOR INTRAORBITAL AND INTRACRANIAL PATHOLOGY”

for

**educational and scientific degree "Doctor of Philosophy "**

in professional direction

7. Health care and sports, professional direction 7.1 Medicine, scientific specialty

"Neurosurgery", based on articles 4, 29 and 31 of the

the regulations for the development of the academic staff of "Acibadem Citylink University UMBAL Tokuda" EAD and Decision of the Scientific Council/ protocol 43 /29. 09. 2022 r./

Author of the dissertation: **Dr. Lili Naskova Laleva**

Research supervisor: **Assoc. Prof. Dr. Vladimir Stefanov Nakov**

Author of the opinion: **Prof. Dr. Hristo Zhelyazkov, MD,**

Head of neurosurgical department, UMBAL "St. Georgi" Plovdiv,

assigned as an external member of the scientific jury by order (No. 15-03-392#1 from 18.11.2022)

### **Brief biographical data about the PhD student:**

Dr. Lili Naskova Laleva was born on July 29, 1985 in Sofia. In 2010 she graduated from the University of Sofia with excellent results and won scholarships. In 2017 she acquired a specialty in neurosurgery. In 2016 she obtained a master's degree in health management. From May 2011 till present she is employed in neurosurgical department of Acibadem City Clinic MBAL Tokuda. Dr. Laleva has completed 13 clinical internships in Italy, Japan, Spain, Germany and Denmark. In addition, there are 23 participations in educational courses and seminars in Bulgaria, Italy, Germany, Denmark, England, France, Romania and Greece. She speaks high level B1 - Spanish and B2 level - English, Italian and German. She is a member of the Bulgarian Society of Neurosurgery, a member of EANS and ESMINT / European Society of Minimally Invasive Neurological Therapy/. Dr. Laleva has won the following awards - scholarships of BLS and EANS; Award "Young medic of the Standard newspaper"; award of the Rotary Club, award of the Sofia University in the name of Academician Asen Zlatarov; Evrika Foundation Award. She participates in 26 publications in refereed journals and 56 participations in Bulgarian and international conferences.

### **Significance of the topic:**

Surgical approaches to the cranial base have been continuously improving since the dawn of the first neurosurgical interventions. In this long journey, pterional access has become the method of choice for all practicing this surgery. The extension of this access usually involves the removal of a varying size of the wing of the sphenoid bone, which, however, in the anterior and posterior part represents the orbit. This gave birth to the idea of using orbital access to the same intracranial areas. The lateral orbitotomy is an established in everyday practice approach, but the progress of the neurosurgical technique, the introduction of minimally invasive techniques - microscopic and endoscopic create challenges for improving its application, determining the correct indications and the search for new intracranial anatomical corridors. These challenges are accepted and brilliantly developed in the present dissertation.

**Structure of the dissertation:**

Dr. Laleva's dissertation is presented on 158 pages. It is properly formatted according to the requirements and written with the necessary academic means of expression. It contains: Introduction and literature review - 14 pages; Purpose and tasks - 2 pages; Materials and methods - 16 pages; Results - 61 pages, presented in 2 sections; Discussion - 37 pages, which are presented in a section similar to the results; Conclusions and Contributions - 3 pages; Bibliography - 14 pages.

The dissertation is illustrated with 32 figures (which include 8 author's original illustrations), 6 tables and 10 diagrams.

Literature review: The literature review is thorough, looking at the historical evolution of the lateral orbitotomy in its anatomical and clinical aspects, the other minimally invasive approaches and the introduction of the new technical possibilities - microsurgery, endoscopic techniques, neuronavigation. From this overview, the current problems in the application of this approach are very adequately brought out - the small number of studies with unspecified indications, the lack of criteria for evaluating the results and the lack of details in the technical implementation.

**Aim and objectives:**

The stated aim of the study is "To study and describe the anatomical and clinical application of extended lateral orbital access as a minimally invasive anterolateral access in neurosurgical practice in operative interventions for tumor and vascular intracranial pathology. There are 7 formulated tasks that correspond to the goal of the study and the specified current problems in the use of the extended lateral orbitotomy.

**Material and methods:**

The anatomical study was performed in a neurosurgical anatomy laboratory in Barcelona on three cadavers - a total of 6 approaches

The clinical study was carried out in the period December 2016-October 2020 at the neurosurgical department at Acibadem CityClinic UMBAL Tokuda and includes 42 patients, that were operated on, with the use of extended lateral orbital approach - grouped in subgroups - 21 patients operated for ruptured aneurysms of the anterior cerebral circulation; 17 patients - with tumor pathology, of which 15 with meningioma of the anterior and middle cranial fossa and 4 patients with orbital pathology. A control group of 116 patients, operated with another anterolateral approach was studied - 65 with pathology of the anterior cerebral blood circulation and 53 - with tumor pathology. Clear selection criteria were used and qualitative and quantitative indicators for evaluating the results were presented. Clinical diagnostic methods, neuroimaging methods and statistical analysis with a specific software package were used.

**Results:**

The results strictly follow the predefined way of conducting and organization of the study. Results are presented in two sections - descriptions of the anatomical study and the results of the clinical study, presented comprehensively in tables and figures with a detailed description of quantitative and qualitative parameters for evaluating the clinical picture, surgical access, early and late results, complications, hospital stay, cosmetic result. In my opinion, the searched and described in detail surgical corridors to intracranial structures: anteromedial extradural corridor to the anterior clinoid process, optic foramen optic nerve, internal carotid artery; posteromedial extradural corridor lateral wall of the cavernous sinus; posterior extradural corridor - to Meckel's cave and the apex of the petrous bone; caudal cordor - to the infratentorial and pterygopalatine fossa, deserve a very high evaluation.

All patients were followed up clinically for a period of 6 months to 3 years.

**Discussion:**

The discussion follows and refers to the presented results, together with a comparison of the literature sources, being again divided into two parts - concerning the anatomical study and the clinical study. The anatomical discussion clearly shows the modern trend of establishing and improving transorbital approaches. In the clinical section, the study data were compared with those of the control group. Through statistical analysis, the absence of a statistically significant difference from the application of the extended lateral orbitotomy was proven in terms of the indicators of intraoperative time, immediate postoperative complications, late postoperative complications, the length of hospital stay and the cosmetic result.

Dr. Laleva compares her own results with results from publications in the recent years in her own table, which shows full comparability of the author's parameters with those of the scientific literature. Based on the evidence presented, clear indications and contraindications for the application of the extended lateral orbitotomy are proposed and the choice of technique is recommended according to the lesion, the risks of bleeding, the experience of the team and the equipment of the operating room.

**Conclusions and contributions:**

The PhD student presents 8 conclusions that correspond to the assigned tasks and the evidence presented in the own studies and discussion. There are 8 contributions listed: two - of a scientific-theoretical nature; two - methodical and four with a practical nature. I allow myself to give an extremely high assessment of the methodical and applied contributions of the presented scientific study.

**Bibliography:**

The bibliographic reference includes 249 titles, of which 11 are Bulgarian and 138 by foreign authors and author groups.

**Publications:** The PhD student has a total of 7 full-text publications in connection with the dissertation work. Three of them are in refereed journals with international databases.

**Conclusion:**

The dissertation contains scientific, methodological and practical results that constitute an original contribution to science and meet all the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria (LA RB), the Regulations for the Implementation of the LA ASRB and the Regulations for the Development of the Academic Staff of Acibadem CityClinic UMBAL Tokuda". The dissertation demonstrates that the PhD student has theoretical knowledge and professional skills in the scientific specialty of neurosurgery and has qualities and skills for independent conduct of scientific research.

Due to the above, I confidently give my positive assessment of the conducted research, presented in the dissertation work and the author's abstract, and I propose to the honorable scientific jury to grant the educational and scientific degree "Doctor of Philosophy" in the program in neurosurgery to Dr. Lili Naskova Laleva.

12.12.2022  
Plovdiv.

prepared the statement:  
Prof. Dr. Hristo Zhelyazkov, MD