

**ATTN: THE CHAIRMAN OF THE SCIENTIFIC JURY  
APPOINTED BY AN ORDER NO R-109-248/30.VII.2019  
OF THE RECTOR OF THE MEDICAL UNIVERSITY OF VARNA**

**Peer review**

by Prof. Mario Draganov Stankev, MD, PhD, DSc

of the dissertation of Vladimir Borisov Kornovski entitled

**Possibilities of transit-time flowmetry for intraoperative blood flow  
objectification and comparison in coronary surgery on a 'beating heart'  
and with extracorporeal circulation**

for the acquisition of the educational and scientific degree of 'Doctor' in the  
field of higher education No 7 'Public health and sports', professional  
direction No 7.1 'Medicine' and scientific speciality of 'Surgery'

The review has been prepared in accordance with the Law of academic staff  
development and the rules for the terms and conditions for acquisition of academic  
degrees and occupation of academic positions in the Medical University of Varna.

**Biographical data**

Dr. Vladimir Borisov Kornovski was born on January 1, 1974 in the city of  
Varna. He graduated from Frédéric Joliot-Curie Fourth French Language High  
School of Varna. In 2002, he completed his medical education at the Medical  
University "Prof. Paraskev Stoyanov" of Varna. He has acquired specialties in  
surgery and cardiac surgery. Dr. Kornovski works as a surgeon in the surgical  
division of St. Anna Hospital of Varna from 2003 to 2005. Since 2005, he works as  
a surgeon in the Cardiac Surgery Department of St. Marina University Hospital of  
Varna. Since 2003 he is assistant professor in the Department of Surgery, Medical  
University of Varna. Dr. Kornovski teaches surgery within seminars, theoretical and  
practical exercises for 4<sup>th</sup> and 5<sup>th</sup> year medical students in Bulgarian and English  
languages. He speaks French and English languages.

**Publication activity and research**

In 2017 and 2018, the PhD student has published four scientific papers on  
the topic of the dissertation. He is the sole author of one article and the first author  
of the other three papers. Fragments of the dissertation have been delivered at three  
scientific forums in Bulgaria and one abroad. Vladimir Borisov Kornovski takes  
part in the Ministry of Education and science 'Student Practices' program as a  
mentor to students conducting practical internships in the specialty. Based on these

facts, I believe that the scientific activity during the preparation period of the dissertation is satisfactory.

### **Characteristics, volume and structure of the dissertation**

The dissertation contains 213 typescript pages and includes: contents - 2 pages, abbreviations - 1 page, introduction - 2 pages, literature review - 64 pages, purpose and tasks - 1 page, material and methods - 25 pages, author's own results - 44 pages, discussion - 41 pages, concluding remarks - 2 pages, conclusions - 1 page, bibliography - 28 pages, list of publications related to the dissertation - 1 page. The dissertation is illustrated with 110 tables and 35 figures. The list of references includes 226 titles, of which 10 are in Cyrillic and 216 are in Latin.

### **Actuality of the dissertation**

Ischemic heart disease (IHD) is as a socially significant disease and a leading cause of death of the population worldwide. Surgical myocardial revascularization, including the conventional extracorporeal circulation method and the revascularization on 'beating heart', are already established surgical procedures for IHD treatment. The problems concerning the intraoperative assessment of blood flow through the bypass performed always arise in every bypass operative intervention. The topic of this dissertation work is an extremely hot topic for our country as there are no publications by Bulgarian authors dealing with the clinical application of the method of transit-time flowmetry for blood flow assessment through the accomplished coronary bypass.

### **Literature review**

The literature review is a thorough and meaningful analysis of the available literature. Most of the sources cited have been published in the last three years, which is a prove for the relevance of the problem. The issues related to the social epidemiology of coronary heart disease and the possibilities for surgical treatment of coronary artery disease are discussed in detail, focusing on the innovations that have come into cardiac surgery in recent years. The problem of intra-operative assessment of blood flow in standard myocardial revascularization and in that of "beating heart" is well analyzed, which shows adequate knowledge of the candidate in this field.

The purpose of the dissertation is formulated clearly and precisely - to analyze the possibilities of transit-time flowmetry for early objective evaluation of coronary blood flow in the performed coronary bypass and to optimize the surgical strategy in patients with coronary artery disease. In order to achieve it, the candidate determined the fulfillment of 6 basic tasks, based on the hypothesis that the method of intraoperative transit-time flowmetry can detect timely coronary graft dysfunction and justify further behavior in patients with conventional coronary artery bypass grafting and these revascularized on "beating heart".

### **Results and discussion**

The analysis of the results is structured in five sections. It is about researching and evaluating an important operative, hemodynamic and laboratory parameters. Of interest are the detailed descriptions of clinical cases, including operative techniques and comprehensive diagnostic studies. The results obtained are processed using modern statistical methods and are systematized in a sufficient number of tables and figures. A number of statistically significant correlations



between the specific parameters have been established, which increases the scientific significance of the dissertation.

In the discussion section the main results are commented and compared to the data of other contemporary authors on the topic of this work. It is worth noting the fact that in many ways the results of the dissertation do not deviate from the world standards.

### **Conclusion**

In the conclusion section, the most important achievements of this study are summarized and ideas are presented for the possible promotion of the method of intraoperative transit-time flowmetry in the Bulgarian cardiac surgery practice.

### **Findings and Contributions**

The dissertation thesis ends with 6 specific, well-formulated conclusions, 4 original scientifically applied contributions and 5 confirmatory contributions.

I fully accept both the conclusions and the contributions of the dissertation.

The abstract of the dissertation is structured according to the requirements and its contents are completely in accordance with the thesis.

In conclusion: The dissertation is a personal scientific work of the candidate. It contains scientifically applied results that make a significant contribution to the scientific and practical cardiac surgery. Dr. Vladimir Borisov Kornovski possesses deep theoretical knowledge and professional skills in cardiac surgery, demonstrating qualities and skills for conducting independent scientific research.

In view of the above, I am convinced of my positive assessment of the dissertation presented and I propose to the members of the distinguished scientific jury to be awarded the educational and scientific degree "Doctor" to Dr. Vladimir Borisov Kornovski

19.08.2019  
Sofia

Reviewer: .....  
Prof. Mario Draganov Stankev, MD, PhD, DSc



