

**TO THE CHAIRMAN OF THE SCIENTIFIC JURY
AT THE MEDICAL UNIVERSITY OF VARNA**

STANDPOINT

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on the dissertation thesis and author's abstract of Vladimir Borisov Kornovski, MD
entitled:

**Possibilities of transit-time flowmetry for intra-operative blood flow
objectification and comparison in coronary surgery on a 'beating heart'
and with the use of 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 dissertation thesis is written on 213 standard typescript pages and is structured
correctly, containing all the sections inherent in such kind of scientific work. The list
of references contains 226 titles, 10 of which are by Bulgarian authors. Most papers
cited have been published in the last three years.

I find the dissertation work to be up-to-date in the modern surgical practice. Coronary
artery bypass (CAB) is now one of the most common major elective surgical
procedures in cardiac surgery, with low periprocedural mortality, and a high rate of
pain relief. One of the most discussed quality control measures in CAB patients is the
assessment of graft patency. Transit-time flowmetry is a simple method to achieve this
goal.

The standard method for intraoperative control of the bypass performed is selective
coronary angiography, but this requires additional operative time, operating room
equipment and staff as well, which restricts its use in routine operative activity.

Transit-time flowmetry does not take extra operative time in intraoperative quality control of the performed anastomosis. This technology is convenient, valid and reproducible in clinical practice. The method is widely used in European countries and the USA. In our country, there are no published results of the application of transit-time flowmetry for the intraoperative evaluation of coronary artery bypass flow, which makes the thesis of Dr. Kornovski extremely relevant.

The literature survey is a good analysis of the published papers on the topic.

The aim of the study is clearly stated: 'To analyze the possibilities of intraoperative transit-time flowmetry for early objective evaluation of coronary blood flow and optimization of surgical behavior in patients with ischemic heart disease.' In order to achieve this goal, the PhD student has assigned 5 tasks, the fulfillment of which shows the importance of transit-time flowmetry for the timely diagnosis of coronary graft dysfunction in CAB performed on "beating heart" and conventional CAB, and the subsequent appropriate surgical behavior.

The dissertation thesis analyzed 143 patients who underwent intraoperative transit-time flowmetry after CAB for a period of 4 years.

Three techniques for myocardial revascularization were applied: the conventional method using extracorporeal circulation (ECC), revascularization on a 'beating heart', and mini-invasive direct coronary revascularization (MIDCAB). The methods section includes a number of original components, too, such as the definition of a protocol for bilateral preparation of internal thoracic arteries in patients undergoing multiple arterial bypass grafts, a protocol for limiting the sternotomy wound infections after bilateral preparation of internal thoracic arteries, as an algorithm for performing the intraoperative flowmetry in order to repeatedly measure blood flow data during the accomplishment of the coronary artery bypass was approved.

Operative parameters, indicators related to blood flow through the bypass performed, and laboratory values were investigated as well as case reports from PhD student's clinical practice were described presenting with specific benefit from the application of the transit-time flowmetry.

In the discussion section, the results obtained were compared with those published by other authors on the topic.

Based on the study carried out, 6 conclusions were drawn, which correspond to the presented results.

The dissertation thesis is a personal scientific work of the PhD student. There are 4 original scientific and applicable contributions and 5 contributions of a confirmatory nature, which I accept.

The abstract of the dissertation meets the requirements for volume, structure and content, and objectively and adequately reflects the main results and scientific contributions to the dissertation.

The PhD student has published 4 scientific articles on the topic of the dissertation thesis. He is the sole author of one article and the first author of the other three papers. The results of the dissertation have been presented at three scientific forums in Bulgaria and one abroad.

In conclusion:

The dissertation thesis submitted to me for opinion by Dr. Vladimir Borisov Kornovski 'Possibilities of transit-time flowmetry for intraoperative objectification and comparison of blood flow in coronary surgery of a 'beating heart' and with the use of extracorporeal circulation' fully meets the requirements of the Law of Academic Career in the Republic of Bulgaria and the Rules for the Career of the Academic Staff of Medical University of Varna.

Because of the above, I fully believe in my positive assessment of the dissertation thesis.

I suggest the honoured members of the scientific jury to award the educational and scientific degree "Doctor" to Vladimir Borisov Kornovski, MD.

2.09.2019

Varna

Respectfully,

Prof. Rumen Nikolov Nenkov, MD, PhD



