

Standpoint

on the dissertation and author's abstract entitled

Possibilities of transit-time flowmetry for intraoperative objectification and comparison of blood flow 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'

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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.

The author examines the possibilities of an easily feasible and non-invasive method for intraoperative diagnosis of coronary artery bypass graft flow in patients with coronary artery disease (CAD). Coronary artery bypass (CAB) is the most commonly performed surgical intervention in cardiac surgery patients. This is a procedure with proven effect in the treatment of ischemic heart disease. Transit-time flowmetry is a convenient and easily executable method that does not take extraoperative time to control the quality of the performed anastomosis, and its routine use would lead to timely recognition of dysfunction of the performed coronary bypass. The author compares the application of the method of transit-time flowmetry and the results obtained with two operative methods

for myocardial revascularization, that of the CAB on a 'beating heart' and the standard CAB with the use of extracorporeal circulation. In our country, there are no published results of the application of transit-time flowmetry in the intraoperative evaluation of coronary artery bypass flow, which makes the thesis of Dr. Vladimir Borisov Kornovski relevant.

The aim is clearly stated: 'To analyze the possibilities of intraoperative transit-time flowmetry for early objective evaluation of coronary blood flow and optimization of surgical behaviour in patients with ischemic heart disease'. In order to achieve this goal, the candidate has assigned 5 tasks, the answers of which indicate the importance of transit-time flowmetry for the timely diagnosis of coronary graft dysfunction in CAB and the subsequent appropriate surgical behaviour in these cases.

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

The methods used for myocardial revascularization are the following: conventional ECC-assisted method, revascularization on a 'beating heart', and mini-invasive direct coronary artery revascularization (MIDCAB).

The methods section defines a protocol for bilateral preparation of the internal thoracic arteries in patients suitable for multiple arterial grafts, a protocol for limiting the development of sternotomy wound infections after bilateral preparation of the internal thoracic arteries, as well as a validated algorithm for conduction the flowmetry in the performed coronary artery bypass. Operative parameters such as left ventricular ejection fraction, operative time, extracorporeal circulation time, etc. were studied as well as parameters related to blood flow through the bypass performed, such as volume of blood flow through the anastomosis and pulsatile index were assessed. Laboratory parameters such as enzyme release of CK-MB and cardiac troponin-I were covered, too. Clinical cases with the specific benefit of intraoperative transit-time flowmetry were described and, subsequently, anastomotic corrections were made and optimal blood flow values were achieved through CAB accomplishment.

In the discussion section, author's own results obtained were compared with those published by other authors on this topic.

From the conducted study, 6 conclusions were drawn, which corresponded to the presented results.

There are 4 original scientific and applicable contributions and 5 contributions of confirmatory character. I consider the dissertation work and the contributions as a personal matter and merit of the PhD student.

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

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

Conclusion

The dissertation thesis submitted by Dr. Vladimir Borisov Kornovski to me for standpoint and entitled 'Possibilities of transit-time flowmetry for intraoperative objectification and comparison of blood flow in coronary surgery on a 'beating heart' and with the use of extracorporeal circulation' is a completed, well and properly structured thesis, which meets the requirements of the Law of Academic Development in the Republic of Bulgaria, the Rules for its implementation and the Rules 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 of a "Doctor" to Dr. Vladimir Borisov Kornovski.

20.08.2019

Varna

Respectfully

Prof. Veselin Petrov Petrov. MD, PhD

