

## OPINION

from

associate professor Dr. Teodor Dimitrov Atanasov, PhD UMHAT "Sofiamed"  
of a dissertation for awarding the educational and scientific degree 'doctor'  
professional direction MEDICINE

Author: Dr. Sultana Bozhidarova Karamanova - Piperkova

Topic: "TRAUMATIC LESIONS TO THE BLOOD VESSELS OF THE EXTREMITAS."  
DIAGNOSTIC AND SURGICAL PROBLEMS. "

Research supervisor: associate professor Dr. Rosen Stoytchev, PhD, UMHATEM  
"N.I.PIROGOV", Sofia

### 1. General presentation of the procedure and the doctoral student

The presented set of materials on paper/electronic media is in accordance with Art. 4, para. 2 of the Law on the Development of the Academic Staff in the Republic of Bulgaria and on Article 10 of the Regulations for the Development of the Academic Staff at UMHATEM "N.I. Pirogov", according to protocol No. NS-01/02.04.2015. from a meeting of the Scientific Council: The doctoral student has attached 5 publications in Bulgarian magazines and anthologies.

### 2. Brief biographical data for the doctoral student

Dr. Sultana Bozhidarova Karamanova - Piperkova was born on January 27, 1987. He completed his medical education in 2012 at the Medical School in Sofia. He has been working at UMHATEM "N.I. Pirogov" since 2013 until now. In 2019, he acquired a specialty in "Vascular Surgery". Master in Health Management since 2018. Fluent in English. She participated in numerous congresses in the country and abroad. He is a member of the BDS and the National Society of Vascular and Endovascular Surgery and Angiology.

### 3. Actuality of the topic and appropriateness of the set aim and tasks

Vascular traumatism of the extremities remains a diagnostic and therapeutic challenge even in modern conditions. The main problem is the lack of qualified

specialists who can solve the problem in the optimal time for the patient. Delayed restoration of blood flow can lead to loss of the limb and permanent disability.

#### 4. Knowing the problem

The presented literature review is 38 pages long and includes brief anatomical notes, pathogenesis, etiology, classification, diagnosis and treatment of vascular lesions of the extremities. It is analytical and presents contemporary understandings of behavior in these traumas. The author examines in detail the different classifications and scoring systems, as this has a direct bearing on both the therapeutic approach and the prognosis. Logically and quite naturally, the emphasis of the literature review falls on treatment methods, with special attention paid to first aid. The various operative techniques, endovascular methods, as well as the place of conservative therapy are discussed.

#### 5. Research methodology

A set aim is clear, specific and is a logical consequence of the title of the topic. There are eight tasks and they are formulated in accordance with the set aim.

#### 6. Characterization and evaluation of the dissertation work

The dissertation submitted for review is written in 165 typewritten pages and is structured as follows:

1. Introduction – 1 page
2. Literature review - 38 pages
3. Purpose and tasks – 1 page
4. Clinical material – 1 page
5. Materials and methods – 7 pages
6. Results – 41 pages
7. Discussion – 40 pages
8. Conclusion – 3 pages
9. Conclusions – 2 pages
10. Contributions – 1 page

11. Scientific works related to the dissertation – 1 page

12. Bibliography – 22 pages

The dissertation topic is illustrated with 29 tables and 48 figures. The bibliography contains 295 literary sources, of which 59 are in Cyrillic. An ambispective analysis was performed on 124 patients with lesions of main vessels for the period 2010 - 2019. In 71 of the cases, upper limbs were affected, in 51 - lower, and in 2 - both. The individual blood vessel is considered as the unit of the study, therefore data on 187 vascular injuries are analyzed. Distribution by gender - 94 (75.8%) were men and 30 (24.2%) were women with an average age of  $44 \pm 3$  years.

The most common are lacerations and late-traumatic wounds.

The etiological factor leading to the injury does not affect the immediate results of the treatment, but it affects the functional recovery - patients with open injuries show a better final result. Most often a. brachialis is affected - 29.58%, followed by a. radialis - 13.38%. In injuries of the lower limb a. femoralis superficialis is the leading - 9.86%. Of the venous vessels, lesions of the v. brachialis dominate - 22.22%.

The most common vascular lesion in the extremities was complete disruption of the blood vessel 54.55%, followed by tangential injury to the vessel wall 21.93%, and 13.9% had an intimal flap. Involvement of more than one blood vessel potentiates the occurrence of intraoperative thrombosis. The axilla, forearm and foot appear to be at highest risk for amputation. Better final results were reported in the upper extremity. The presence of concomitant bone damage impairs immediate results and recovery and potentiates intraoperative thromboses. Of the accompanying diseases, PAD and diabetes with accompanying vascular damage increase the risk of thrombosis after the 6th month. The analysis of patients hospitalized within 6 hours of the trauma and after this period is interesting. It turns out that there is no difference in the frequency of thrombosis, which makes the author note the importance of other factors - the care of the limb during transport to the hospital - placing and periodically releasing a tourniquet, good immobilization, disinfection of the wound, the correct storage of amputated parts and etc. The observations on the effect of shock are also interesting - it does not increase the frequency of thrombosis, but worsens the

immediate results. The various operative approaches as well as reconstruction techniques are analyzed. Interposition of an autovenous graft was most often applied – 37.43%, i.e. the most frequent vascular injury was transection. Fasciotomies were performed only when indicated. Good functional recovery was achieved in 86.3% of patients. In this section, the tables are not adequately described and explained in the text. With 104 patients followed, 107 and 124 appear in the tables, and it is unclear whether these are patients, vessels, or limbs.

Early and late postoperative complications were analyzed.

Based on all the material, the author proposes a diagnostic and therapeutic algorithm for behavior in these patients. They are clear, precise and easy to implement.

As a result of the in-depth study of the problem, Dr. Karamanova drew 15 conclusions.

I accept the following contributions to the dissertation, namely:

1. The problems of diagnosis and surgical treatment of vascular injuries limbs and its results are comprehensively examined for the first time in our country.

2. Through the application of statistical methods, tests and analyzes the following have been established:

- The main risk factors for the occurrence of intra- and postoperative thrombosis;
- The importance of accompanying diseases, causing the occurrence of intra- and postoperative complications;

3. Follow-up of the long-term results of the surgical treatment of vascular limb injuries within 1 to 3 years.

4. Algorithms for diagnosis and treatment of vascular patients have been created extremity trauma as a protocol of behavior by the specialists working in trauma centers.

In conclusion, the presented dissertation is based on serious clinical material relevant to practice in terms of the severity of traumatic injuries and the high

potential for permanent disability. The results obtained, formulated in conclusions and algorithmic, are applicable in the practice of all emergency units and following them would improve the functional results.

The dissertation shows that the doctoral student Dr. Sultana Bozhidarova Karamanova - Piperkova possesses in-depth theoretical knowledge and professional skills in the scientific specialty of Vascular Surgery, demonstrating qualities and skills for independent conduct of scientific research. Due to the above, I confidently give my positive assessment of the conducted research, presented by the above-reviewed dissertation work, author of dissertation summary, achieved results and contributions, and I propose to the honorable scientific jury to award the educational and scientific degree "doctor" to Dr. Sultana Bozhidarova Karamanova - Piperkova in a doctoral program in "General Surgery"

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Assoc.Prof. Dr. Teodor Atanasov, PhD