

OPINION
by Prof. Dr. Kiril Vassilev Draganov, MD, DSc,
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of dissertation for awarding the educational and scientific degree "PhD"

Field of higher education 7. Healthcare and sports, field 7.1. Medicine

Scientific specialty "General Surgery"

Author: Dr. Adelin Georgiev Ivanov

Form of doctoral studies: independent preparation

Institution: Scientific Council, Acibadem City Clinic Tokuda Hospital, Sofia

Topic: "Free-hand technique for placement of pedicular screws in the surgical treatment of scoliosis in children"

Scientific adviser: Assoc. Prof. Dr. Vasil Yablanski, MD, Acibadem City Clinic Tokuda Hospital, Sofia

1. General presentation of the procedure and the doctoral student

The set of materials presented by the doctoral student on paper and electronic media is in full compliance with the requirements of the current regulatory framework in the country, namely - Art. 74, para 1, item 1 of the Higher Education Act, Art. 24, para. 2, para 3, para 6 of the Regulations for application of the Law for development of the academic staff in the Republic of Bulgaria (PP ZRASRB) and art. 23, para 6 of the Regulations for development of the academic staff in Acibadem City Clinic Tokuda Hospital, Sofia.

This set of materials includes the following documents:

- Application to the Director of Acibadem City Clinic Tokuda Hospital, Sofia for disclosure of the procedure for defense of the dissertation;
- CV in European format with the signature of the doctoral student;
- notarized copy of the diploma for higher education;
- orders for enrollment in doctoral studies and for expulsion with the right to defense;
- order for conducting an examination from the individual plan and a respective protocol for passed doctoral minimum in the specialty;
- order for appointment and minutes of the meeting of the extended scientific college for preliminary discussion of the dissertation and the decisions taken for opening the procedure and for the composition of the scientific jury;
- dissertation work;
- abstract to the dissertation;
- list of scientific publications on the topic of the dissertation;
- copies of the scientific publications on the topic of the dissertation;
- list of participations in scientific forums on the topic of the dissertation;
- declaration of originality and authenticity of the attached documents;

Dr. Ivanov has attached 2 (two) full-text publications related to the topic of the dissertation.

Notes and comment on the documents

The procedure for the defense of the dissertation, as well as the related documents fully meet the requirements of the current legal framework in the Republic of Bulgaria.

Brief biographical data

Dr. Adelin Georgiev Ivanov graduated from the Medical Faculty of the Thracian University, Stara Zagora in 1989. From 1990 to 2006 Dr. Ivanov was an assistant at the Clinic of Orthopedics and Traumatology, University Hospital, Stara Zagora, and since 2004 he has been performing the position of Chief of Operations at the same hospital. Acquired a specialty in "Orthopedics and Traumatology" in 1995. Since 2006 the doctoral student is part of the epic

of the Department of Orthopedics and Traumatology, "ASK MHAT Tokuda", and since September 2019 he has been a part-time assistant at the MF , Sofia University "St. Kliment Ohridski", Sofia.

Since 2005 Dr. Adelin Ivanov holds a Master's degree in Health Management, and in the same specialty he has conducted two specializations in Ascona, Switzerland (in 2005 and 2006). The doctoral student's aspiration for professional development is demonstrated by the specializations held at the A. Paré Inter-University Hospital, Department of Orthopedics and Traumatology, Mons, Belgium (August, 1994-March, 1995 and October-December, 1998). .) as well as under the Scoliosis Research Society program.

On March 7, 2018, Dr. Adelin Ivanov was enrolled as a doctoral student in self-study in the scientific specialty "General Surgery" (order №119 / March 7, 2018 of the Executive Director of "ASK MHAT Tokuda"). After successfully passing the doctoral minimum exam and internal defense, he was expelled with the right to defense (order №159 / 22.03.2021 of the Executive Director of Acibadem City Clinic Tokuda Hospital).

2. Relevance of the topic

The topic of the dissertation is extremely relevant for Bulgarian medicine in both purely scientific and scientifically applied aspects for a number of reasons.

Surgical correction of scoliosis in childhood is associated with many challenges. The use of pedicular screws allows correction of more than 70% of the initial deformation, and the effect is lasting. The positioning accuracy of the screws varies in the range of 86-97%, and the "Free-hand" technique itself significantly reduces the radiation load of the patient and the team.

The orthopedic intervention itself is long, associated with relatively high blood loss and risk of serious complications.

Creating unified protocols for planning, implementation, and verification can improve outcomes and reduce the incidence of perioperative complications.

The team of the Department of Orthopedics and Traumatology, ASK MHAT Tokuda has accumulated over 10 years of experience in the surgical correction of scoliosis in childhood. This is a solid foundation on which Dr. Ivanov stands and the main motivation for starting the study.

3. Knowledge of the problem

The literature review is presented in a volume of 34 pages (from page 6 to page 39 inclusive). The doctoral student has examined in detail all the current information concerning scoliosis in childhood and its surgical treatment. Some of this information sounds "too propaedeutic" - e.g. the definition of scoliosis, incl. and its idiopathic form, the classification presented, some facts from the "clinical assessment of scoliosis", etc. These are facts and data that should be known to specialists dealing with the problems of diagnosis and treatment of scoliosis. Some of the figures and tables do not have a title and are not numbered, nor is the source from which they were copied indicated.

An important place in the review is occupied by some controversial and not fully studied points, such as. the pathogenesis of idiopathic scoliosis. The brief historical overview of the development of spinal surgery in Bulgaria creates a pleasant impression. This shows academicism and respect for the pioneers of this really very difficult section in orthopedics.

Logically, the review in the review is the consideration of the various operative techniques with their advantages and disadvantages, the intraoperative monitoring, the assessment of the accuracy of the placement of the screws, the complications.

The review of the specialized literature ends with 8 conclusions, which is the main motivation of the doctoral student to conduct the study.

All this proves a detailed knowledge of the problem by the doctoral student.

4. Research methodology

The aim of the study (p. 40) is to analyze the results of the application of the Free-hand technique and to develop protocols for planning, implementation and verification in order to reduce the risk of complications. To achieve this goal, Dr. Adelin Ivanov formulates 6 tasks - specific, precise and clear, without going into unnecessary details on the one hand, and on the other to allow for an in-depth scientific study. Their numbering starts from 2., missing task №1, which I define as a technical error.

The study was retrospective and included 68 patients.

5. Characteristics and evaluation of the dissertation and contributions

The dissertation has a volume of 114 standard pages and is illustrated with 38 tables, 10 graphs and 54 figures. The actual number is higher due to the above-mentioned lack of numbering of some figures and tables in the literature review. The bibliographic reference contains 144 literary sources, 3 of which are by Bulgarian authors.

The opinion on the literature review, the purpose and the tasks was stated above. Here I will focus on the results achieved, their presentation and discussion, conclusions and contributions. Important from a practical point of view are the achieved results, presented descriptively and deductively (pp.56-88). These results confirm that scoliotic surgery is high risk and requires a multidisciplinary approach. On the other hand, the low percentage of malposition of the screws, combined with low frequency and neurological and vascular complications are extremely good attestation for the work in the institution of the doctoral student.

I highly appreciate the "Protocol for stages of verification of the position of the pedicular screws" presented by the doctoral student (duplicated on pages 52 and 101). It would be useful for both doctors and this contingent of patients to present the proposed algorithm at the relevant national scientific forums and to implement it in the Bulgarian orthopedic practice.

On pages 99-101 Dr. Adelin Ivanov formulates 13 conclusions, which are based on the overall analysis of the results and are the logical conclusion of the dissertation.

6. Assessment of the publications and personal contribution of the doctoral student

A list of two full-text publications related to the topic of the dissertation is presented.

After a detailed acquaintance with the dissertation and the publications related to it, I give an extremely high assessment of the overall work of Dr. Adelin Ivanov on the problems of Free-hand technique for placement of pedicular screws in the surgical treatment of scoliosis in childhood.

The dissertation is an in-depth study. The work on it, the obtained results, their analysis, the conclusions made and the contributions prove the personal merits of the doctoral student.

Critical remarks and recommendations

The critical remarks were mentioned in the above opinion, and I want to emphasize that they do not in any way reduce the qualities of the dissertation, its scientific and scientific-applied value.

7. Abstract

The abstract to the dissertation of Dr. Adelin Ivanov meets the requirements in terms of volume and content and gives a clear enough idea of the nature of the work, reflects in sufficient detail the results achieved and the formulated conclusions.

CONCLUSION

The dissertation of Dr. Adelin Georgiev Ivanov on "Free-hand technique for placement of pedicular screws in the surgical treatment of scoliosis in childhood" contains scientific and scientific-applied achievements that represent an original contribution to science and meet all the requirements of ZRASRB, the Regulations for implementation of ZRASRB and the Regulations of ASK MHAT Tokuda. The presented materials and dissertation results fully comply with the specific requirements, have an original character and no plagiarism is established.

The dissertation shows that the doctoral student has in-depth theoretical knowledge and professional skills, demonstrating qualities and skills for independent research.

Due to the above, I confidently give my positive assessment of the study and propose to the esteemed scientific jury to award a well-deserved educational and scientific degree 'Doctor' to Dr. Adelin Georgiev Ivanov in a doctoral program in General Surgery, for which I strongly vote "YES".

Prepared the opinion:

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(Prof. Dr. Kiril Draganov, MD, DSc)

10.05.2021