

**The Scientific Jury,  
determined by Order No. 15-03-60-1/13.02.2024.  
at UMBAL "Tokuda"**

**Regarding the competition for the academic position "ASSOCIATE PROFESSOR"  
In the scientific specialty "Orthopaedics and Traumatology" with code: 03.01.40  
from professional direction "7.1. Medicine"**

**Announced by the Orthopedics and Traumatology Clinic of "Acibadem City Clinic  
UMBAL Tokuda" in SG, no. 104/15.12.2023**

**Candidate: Dr. Adelin Ivanov, MD**

**Department of Orthopedics and Traumatology, "Acibadem City Clinic UMBAL  
Tokuda"**

## **REVIEW**

**of**

**Prof. Vladimir Pavlov Stavrev, MD, PhD, DMSc**

**Scientific specialty: Orthopedics and traumatology**

Address: town Plovdiv, Bulgaria, 66 Peshtersko Shosse Blvd

Email: [vstavrev@yahoo.com](mailto:vstavrev@yahoo.com)

Mobile phone: 0888 944 246

### **1. Analysis of the applicant's personnel profile:**

The documents presented by Dr. Adelin Georgiev Ivanov, MD, orthopedic surgeon at the Clinic of Orthopedics and Traumatology, for participation in the competition for the academic position "AssociateProfessor" in the professional direction 7.1. "Medicine" and the scientific specialty "Orthopaedics and Traumatology" for the needs of the Orthopedics and Traumatology Clinic at "Ajibadem City Clinic UMBAL Tokuda"-EAD, announced in the Official State Newspaper, issue 104 of 15.12.2023.

During his qualification in Switzerland and Belgium, Dr. Adelin Ivanov mastered a number of innovative diagnostic and therapeutic methods, important for his daily diagnostic and surgical activity. The candidate aims to attract and prepare young and motivated people to work in the field of orthopedics and traumatology as a university and fundamental science discipline. He has theoretical, methodical and practical skills for the development of modern research activities in the field of orthopedics and traumatology. Introduces diagnostic and therapeutic methods in his clinical practice based on the results of his own research activities.

The presented topic is of interest because it is the first monograph in the Republic of Bulgaria concerning the problems of NMS, based entirely on own experience and follow-up of patients. The surgical technique that is actively used in the modern approach to the surgical treatment of scoliotic deformities in childhood is discussed. The aim of the dissertation is to present the advantages of this surgical technique, the principles of its planning, the theoretical and technical requirements of its implementation, as well as a verification protocol in order to minimize risks.

The monographic work is properly structured and presented in a volume of 173 standard typewritten pages and illustrated with many tables, graphs and figures.

The first chapter presents the history of the treatment of scoliosis and a comparison with the modern trends in the treatment of the disease idiopathic scoliosis, the most famous theories about the pathogenesis of this disease. Various operative techniques used over the years for the treatment of children's spinal deformities are presented.

The anatomical features of the different levels of the spine, the topographical anatomical dependencies in the area are shown. The importance of IONM /intraoperative neuromonitoring/ for the safety of surgical treatment has been demonstrated. The advantages of the operative technique due to low levels of X-ray exposure are presented. The risks and complications of surgical treatment are also presented. The main objective is clearly presented and corresponds to the title, namely "NEUROMUSCULAR SCOLIOSIS - FEATURES IN DEVELOPMENT, PLANNING AND OPERATIVE TREATMENT".

The aim of the study is to develop protocols for planning, implementation and verification by analyzing the results of the application of the FREE-HAND operative technique in order to reduce the risk of complications in its application for the operative treatment of idiopathic scoliosis.

According to the author, in the period 2009-2023, in the Orthopedics and Traumatology Clinic at "Acibadem City Clinic UMBAL Tokuda" - EAD, over 40 patients with a diagnosis of NMS were treated surgically. According to the author, the preparation and planning of the surgical treatment were tailored to the specifics of the underlying disease and the available comorbidities. Different operative techniques and a wide range of modern implants are used, which allow achieving good and long-lasting corrections of scoliotic deformities.

The features and performance of pelvic fixation and vertebral osteotomies are discussed. The control of the various stages of the operative treatment was carried out on the basis of an algorithm introduced for the verification of the screw positioning during vertebrodesis. The results of the intraoperative neuromonitoring used were followed. The possibilities, features and its reliability in accompanying neuromuscular diseases are reported.

The first chapter presents the disease idiopathic scoliosis, the most famous theories about the pathogenesis of this disease. Various operative techniques used over the years for the treatment of children's spinal deformities are presented. The advantages of pedicle screw-assisted vertebrodesis compared to other techniques are presented. The anatomical features of the different levels of the spine, the topographical anatomical dependencies in the area are shown. The importance of IONM /intraoperative neuromonitoring/ for the safety of surgical treatment has been demonstrated. The advantages of the operative technique due to low levels of X-ray exposure are presented.

The advantages of the operative technique due to low levels of X-ray exposure are presented. The risks and complications of surgical treatment are also presented.

The main objective is clearly presented and corresponds to the title, namely "NEUROMUSCULAR SCOLIOSIS - FEATURES IN DEVELOPMENT, PLANNING AND OPERATIVE TREATMENT".

The aim of the present study is, by analyzing the results of the application of the Free-hand operative technique, to develop protocols for planning, execution and verification in order to reduce the risk of complications in its application for the operative treatment of idiopathic scoliosis. Core tasks that are clearly defined and achievable support the proof of the core purpose.

The design is a retrospective study that included 68 patients with idiopathic scoliosis who underwent surgical treatment over a long period of time at the Orthopedics and Traumatology Clinic of "Acibadem City Clinic MBAL Tokuda" JSC.

The following are descriptive statistics for the distribution of patients by age, sex, types of scoliosis, as well as the distribution of patients according to the Lenke classification.

Data on medical history and orthopedic status, assessment of respiratory function, assessment of urological status, assessment of neurological status, and imaging studies are presented in detail. The protocols for preoperative evaluation and planning of operative intervention are described.

In the "Surgical techniques" part, the so-called. "FREE-HAND" operative technique for posterior instrumentation of pedicle screws is presented in detail. Known in the literature as FH. A possible combination with the use of pedicle and laminated hooks, sublaminar bands, with strict adherence to the stages in the operative protocol.

In the discussion of the statistical results, the established correlation dependence of the reported malpositions in relation to the various indicators is shown - type of scoliosis, type of deformity according to the Lenke classification, size of the preoperative Cobb angle, size of the rotation and levels of synthesis.

The screw positioning, data on the number of inserted screws, synthesis levels, degree of deformity correction are presented in detail for verification. The reported malpositions in screw synthesis are demonstrated. Data are presented on the relative weight of the specified verification methods, as well as the identified complications. Posterior instrumentation with pedicle screws, repositions, osteotomies, and halotraction are described in detail.

A discussion of the results is presented in the Complications chapter. A summary analysis, the author's point of view, a comparison of the achieved results with the results of other authors is presented

Conclusions and recommendations of great practical value are presented in the "Conclusion" chapter. Emphasizing the importance of preoperative preparation and choosing the right moment for the operation. Attention is paid to the postoperative period, which is longer and requires an active attitude in the fight against possible complications. All this, thus presented, is a summary of the author's clinical experience and the results of the statistical data and their dependencies.

At the end of each chapter, a bibliography is presented, which contains no less than 20 sources. Sources are listed alphabetically. There are about 140 literature sources in total.

## **2. General description of the presented materials:**

The documents of Dr. Adeline Ivanov meet the requirements laid down in the Higher Education Institution, the Regulations for Organization, as well as the Regulations for the Development of the Academic Staff of "Acibadem City Clinic UMBAL Tokuda". They are well arranged and contain sufficient evidentiary material.

## **3. Evaluation of scientific works for the overall academic development of the candidate:**

Dr. Adelin Ivanov participated in the competition with the total number of scientific papers is 15, of which 14 are in scientific journals in Bulgaria. Participation in scientific forums is 10, of which 7 are forums with international participation. In more than two-thirds of his works, he is the first or second author. The topics represented in the scientific production are diverse:

The total number of citations is 14, of which 5 are in monographs. All citations are in Bulgaria. His scientific research and practical-applied activities are aimed at the following main directions in orthopedic surgery:

- ✓ Introduction and development of Free-hand operative technique for placement of pedicle screws;
- ✓ Methodology for evaluating the positioning of pedicle screws and protocols for verification;
- ✓ Operative techniques for the treatment of scoliosis in childhood;
- ✓ Development and improvement of approaches in the planning and operative treatment of neuromuscular scoliosis;
- ✓ The application and validation of mini-invasive surgery for corrections of the forefoot;
- ✓ Introduction of intraoperative neuromonitoring during surgical treatment of scoliosis (idiopathic and neuromuscular) in childhood.

Dr. Adelin Ivanov is a regular speaker at scientific forums. There are participations in scientific forums /10/, of which 7 are forums with international participation. He is a member of Bulgarian and international scientific associations.

The candidate has participated in the following postgraduate courses:

In 2010 - 2020, "Operative treatment of children's spinal deformities", SRS Program (Scoliosis Research Society);

In July 2005, Health Management, Ascona, Switzerland;

In July 2006 Health Management, Ascona, Switzerland;

In October - December 1998 Inter-University Hospital "A.Paré", Department "Orthopedics and Traumatology" Mons, Belgium;

August 1994 - March 1995 "Inter"-University Hospital "A.Paré", Department "Orthopaedics and Traumatology" Mons, Belgium

**4. Comprehensive qualitative evaluation of the teaching-methodical and teaching activity, scientific guidance of students, doctoral students and specialists.**

Dr. Adelin Ivanov educates by giving quality practical and theoretical training to students - doctors from the fourth and fifth medical courses, residents in the specialty "Orthopaedics and traumatology" and general practitioners, and conducts specialized lectures for interns and specialists. In parallel, he gives lectures to general practitioners

He is a member of examination committees for semester examinations in orthopedics and traumatology for students. He also teaches international students visiting Sofia University "Kliment Ohridsky" under the Erasmus program.

**5. General assessment of the candidate's compliance with the mandatory conditions, quantitative criteria and scientific and metrical indicators, according to the Rules for the organization and activities of "Acibadem City Clinic UMBAL Tokuda"- Sofia.**

Dr. Adelin Ivanov is a highly erudite scientific teacher. He has a clear outlook on the novelties in the field of orthopedics and traumatology; he has a perfect command of English and Russian, which helps him to read, prepare and communicate with world-class colleagues. He constantly improves himself, has excellent computer training. Possesses combinative thinking and leadership qualities. He knows how to captivate the audience and motivate young specialists for achievements in medical innovations.

Dr. Adelin Ivanov applied with the required number of publications in Bulgarian and international journals. The candidate also meets the additional criteria for participation in the competition.

**Conclusion.**

Dr. Adelin Ivanov fully meets the stated conditions and scientific-metric criteria of "Acibadem City Clinic UMBAL Tokuda" and all the requirements of the regulations for scientific degrees in the Republic of Bulgaria for holding the academic position of "ASSOCIATE PROFESSOR".

I suggest to the members of the respected scientific jury to give a positive vote for Dr. Adelin Georgiev Ivanov, when awarding the scientific title "ASSOCIATE PROFESSOR".

03/01/2024 Signature:

A handwritten signature in blue ink, appearing to be 'V. Stavrev', written over a horizontal line.

Prof. Vladimir Stavrev, MD, PhD, DMSc