

To the chairman of the scientific jury  
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of the Rector of the Medical University - Varna

# REVIEW

by

Prof. Dr.ß Ivelin Takorov, MD, PhD

*Head of the First Clinic of Abdominal Surgery , at the Military Medical Academy-Sofia*

*Subject: Defense of a dissertation for the acquisition of the educational and scientific degree "Doctor " on the topic: "Transabdominal laparoscopic treatment of adrenal tumors in adults and children", developed by Dr. Stefan Blagovestov Mihaylov, a full-time doctoral student at the Department of "General and Operative Surgery" at the Medical University "Prof. Dr. P. Stoyanov" - Stara Zagora, with scientific supervisor Assoc. Prof. Dr. Veselin Marinov, MD, PhD,BSc.*

Dr. Stefan Blagovestov Mihaylov was born in 1996 in the town of Dryanovo. He graduated from secondary education in 2015 at the National Aprilovska High School with a German language profile. He graduated from Medicine in 2021 at MU-Varna. He has been specializing in Pediatric Surgery since 2022 until now at the University Hospital "St. Marina" - Varna, where he is currently actively involved in the diagnostic and treatment process as a resident in the First Clinic of Surgery, University Hospital "St. Marina" - Varna. Dr. Mihaylov has been a full-time assistant and doctoral student at the Department of General and Operative Surgery, MU "Prof. Dr. Paraskev Stoyanov" - Varna since 2022.

During his training period, Dr. Mihaylov developed 3 full-text publications related to his dissertation work. Dr. Mihaylov is fluent in English and German. He is a regular member of the Bulgarian Society of Pediatric Surgery and the European Society of Endocrine Surgeons (ESES).

The scientific paper submitted for evaluation "Transabdominal laparoscopic treatment of adrenal tumors in adults and children" was developed in accordance with the requirements for acquiring the scientific and educational degree "doctor", is illustrated with 50 figures, 38 tables and has a total volume

of 220 pages, distributed as follows:

- I. Introduction - 3 pages.
- II. Literature review - 92 pages.
- III. Goal and objectives - 1 page.
- IV. Materials and Methods - 17 pages.
- V. Results – 46 pages.
- VI. Discussion – 12 pages.
- VII. Conclusions - 2 pages.
- VIII. Contributions - 1 page.
- IX. Appendices – 7 pages.
- X. Publications related to the dissertation - 1 page.
- XI. Bibliography - 28 pages.

The relevance and timeliness of the dissertation work are evidenced by three facts: 1. Adrenal tumors represent a significant medical problem due to their heterogeneous clinical presentation – from accidentally discovered incidentalomas to hormonally active or malignant formations. 2. With the progress of imaging diagnostics and endocrinology, the frequency of diagnosis of these neoplasms is increasing, which emphasizes the need to improve surgical approaches. 3. Such studies are relatively rare in the Bulgarian scientific literature, which emphasizes the relevance of the present study, aimed at systematically evaluating the effectiveness, safety and advantages of transabdominal laparoscopic treatment of adrenal tumors, as well as at popularizing this approach in Bulgarian clinical practice.

The literature review presented on 92 printed pages is of sufficient volume, very clearly structured, contemporary and comprehensive. It enables readers to become adequately acquainted with the problem. After brief historical notes, the key moments in the development of adrenal surgery are consistently and very accurately examined. The following sub-points clearly depict the anatomical and physiological features of the adrenal gland. The development of endocrine surgery in this area is presented from the early stages of conventional surgery through laparoscopic approaches, the use of robotic systems and single-incision approaches for surgical treatment. The emphasis is on the individualized approach to assessment and selection of an operative method, as well as future directions of development of surgery in this area. All diseases in adults and children that require surgical removal of the adrenal gland are presented in detail and comprehensively. The complications of surgery in this area are presented systematically. Logically, the literature review ends with a study of the experience published by Bulgarian authors on the subject to date. The critical analysis of the literature points to the meaning of the present work.

The goal set "To analyze the results of transabdominal laparoscopic adrenalectomy in adults and children" is completely adequate, as the six tasks for its implementation are precise, measured and correspond to the topic of the dissertation.

The chapter "Materials and Methods" presents 82 laparoscopic interventions for adrenal gland diseases. 22 patients with planned indications for adrenalectomy - pheochromocytoma were analyzed and followed up; 13 patients with indications - hyperaldosteronism; 21 patients with established Cushing's Syndrome and 26 patients with hormonally inactive tumors of the adrenal gland. All patients were operated on and followed up retrospectively in the First Surgery Clinic at the University Hospital "St. Marina" EAD, Varna (2008 - 2024). The inclusion and exclusion criteria, diagnostic methods, indications for surgical treatment, preoperative preparation, surgical techniques used and postoperative follow-up are clearly described. The main steps of each surgical intervention are presented in detail and clearly. The statistical and mathematical methods used for analyzing the results are clearly indicated.

The chapter "Results" describes the results obtained after data processing on 46 pages and compares them on 12 pages with the data published in the literature in the chapter "Discussion". There are no surprises in terms of demographics. The analysis of the results of the dissertation work shows that transabdominal laparoscopic adrenalectomy is an effective, safe and minimally invasive method for the treatment of adrenal tumors in adults and children. The average operative time ( $157.46 \pm 51.67$  min) and intraoperative blood loss are in accordance with international standards, and the need for anesthesia ( $2.78 \pm 1.46$  days) and the time to verticalization ( $1.29 \pm 0.77$  days) emphasize the favorable recovery profile of the method. It was found that neither age, nor histological subtype, nor laterality of the tumor are statistically significant predictors of postoperative complications, while BMI and tumor functionality have a more significant impact on the operative indicators. Hormonal remission was achieved in all patients with endocrine active tumors. The presented data confirm the applicability of the laparoscopic approach as the gold standard and demonstrate a high level of surgical expertise and excellent clinical results.

In the next chapter "Conclusions" within 2 pages, the main conclusions from the obtained results and their comparison with the world literature are synthesized. The six conclusions made are moderate, meaningful and cover the stated tasks. I accept the contributions made by the dissertation. They sound measured and truly emphasize the merits of scientific work.

The bibliography is comprehensive and up-to-date, including 426 scientific papers in Latin and 2 publications in Cyrillic. Almost all fundamental works relevant to the establishment and development of modern adrenal surgery are listed.

The dissertation is accompanied by a 92-page abstract in A5 format. Its content complies with the regulatory requirements and completely correctly includes all chapters of the dissertation work, with the exception of the literature review and bibliography.

Considering all of the above and in addition - the perspective, personal and professional qualities of Dr. Stefan Mihaylov, I express my opinion "FOR" the defense of the dissertation "Transabdominal laparoscopic treatment of adrenal tumors in adults and children" and I take the liberty of inviting the esteemed members of the scientific jury to support the awarding of the educational and scientific degree "doctor".

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Sofia

(Prof. Dr. Ivelin Takorov, MD, PhD)