

TO  
THE CHAIRMAN OF THE SCIENTIFIC JURY,  
APPOINTED BY ORDER No. R-109-471 / 20.11.2025  
OF THE RECTOR OF MEDICAL UNIVERSITY – VARNA

## OPINION

By Assoc. Prof. Elena Rosenova Arabadzhieva, MD, PhD

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### **1. Grounds for Issuing the Opinion**

Based on Order No. R-109-471 / 20.11.2025 of the Rector of Medical University – Varna, I have been appointed as a member of the Scientific Jury for the awarding of the educational and scientific degree Doctor in the professional field 7.1. Medicine, PhD programme in Surgery.

In this capacity, I hereby present this opinion on the dissertation of Dr. Vyara Dimitrova Grigorova, entitled: “Conventional Approach in Postoperative Hernias – Possibilities and Challenges”, developed under the scientific supervision of Prof. Plamen Milchev Chernopolsky, MD, PhD, DSc.

The opinion has been prepared in accordance with the requirements of the Law on the development of the academic staff in the Republic of Bulgaria and the Regulations for its implementation.

### **2. Biographical Data of the PhD Candidate**

Dr. Vyara Dimitrova Grigorova was born on 16 November 1988 in Kazanlak. She completed her secondary education at the Goethe German Language High School in Burgas. She obtained her Master’s degree in Medicine from Medical University – Varna, and subsequently acquired a Master’s degree in Health Management.

Since 2013, she has been working in the Second Department of Surgery at the University Hospital “St. Marina” – Varna. She completed her General Surgery specialization from 2014 to 2019 and successfully passed the state examination for the specialty.

Since 2017, she has been appointed an honorary assistant, and since 2018, a full-time assistant, at the Department of Surgical Diseases at Medical University – Varna, actively participating in the practical training of medical students in both the Bulgarian- and English-language programmes. She has undertaken specialized training courses and long-term clinical

observerships abroad, including at AKH Vienna and within the EAES Fellowship Programme in Bucharest.

Since November 2019, she has been enrolled as a full-time PhD candidate. She is a member of the Bulgarian Surgical Society and several international professional organizations, including EAES, ESSO, EHS, EDS, and IASGO.

### **3. Relevance and Scientific Merit of the Topic**

Postoperative (incisional) hernias represent a significant clinical and socio-economic problem due to their high incidence, tendency toward recurrence, and substantial negative impact on patients' quality of life. Despite its focus on conventional surgical techniques, the dissertation appropriately situates them alongside contemporary laparoscopic and hybrid approaches, the concept of complex hernias, strategies for recurrence prevention, and the economic aspects of treatment.

This is a crucial aspect of the study, as the dissertation does not disregard minimally invasive surgery but instead deliberately analyzes and justifies the role of the open surgical approach within real-world clinical practice.

The selected topic is relevant, scientifically justified, and clearly dissertation-worthy, with a pronounced applied scientific value.

### **4. Structure and Scope of the Dissertation**

The dissertation is well-structured and methodologically sound, with a clearly defined topic examined both historically and in contemporary clinical and organizational contexts. From the table of contents alone, it is evident that Dr. Grigorova has invested considerable effort to ensure comprehensiveness and systematic presentation.

The dissertation comprises **203 pages** and is organized in accordance with the formal requirements for a doctoral thesis, including an introduction, literature review, aims and objectives, materials and methods, results, discussion, conclusions, summary of findings, scientific contributions, and references.

The **literature review** covers **45 pages** and is exceptionally comprehensive in scope and historical depth. Its main strengths include:

- tracing the evolution of hernia surgery from antiquity to the present day;
- precise and consistent use of specialized terminology;
- appropriate citation of both classical and contemporary sources;
- skillful integration of historical facts with clinical reasoning.

Particularly noteworthy is the dedicated section addressing the **development of postoperative hernia treatment in Bulgaria**, which demonstrates an in-depth knowledge of the national surgical school and provides valuable historical and professional context.

The **Materials and Methods** section comprises approximately **6 pages**, while the **Results** section extends over approximately **65 pages**, presenting clinical, postoperative, and economic outcomes in a clear and logically structured manner.

The **Discussion** section covers approximately **37 pages**, in which the author compares her own findings with contemporary literature and interprets them within the framework of current concepts in postoperative hernia management. The **Conclusions, Summary of Findings, and Scientific Contributions** sections total approximately **six pages**.

The dissertation is richly illustrated with tables and figures that effectively support the analysis and interpretation of the presented results.

## **5. Aims, Objectives, Materials, and Methods**

The aim of the doctoral dissertation is clearly defined and logically derived from the literature review. The formulated objectives are appropriate and enable a comprehensive assessment of the clinical, risk-related, and economic aspects of conventional treatment for postoperative hernias.

The applied methodology includes a retrospective analysis of a substantial clinical cohort. Appropriate statistical methods have been employed, enabling valid correlation and regression analyses, as well as an economic evaluation. Overall, the methodological approach is adequate, well-structured, and fully compliant with the requirements for the educational and scientific degree Doctor.

## **6. Results and Discussion**

The study includes **273 patients** who underwent surgery for postoperative (incisional) hernias during **2017–2021**. A comprehensive analysis was conducted to evaluate multiple risk factors potentially associated with the development and recurrence of postoperative hernias.

Correlation analysis demonstrated that **sex, age, smoking status, diabetes mellitus, and the type of previous surgical incision**, among other factors, were associated with the occurrence of postoperative hernias; however, these variables did not reach statistical significance ( $p > 0.05$ ). In contrast, **the number of previous surgical interventions, increased intraoperative blood loss during the initial procedure, non-compliance with the postoperative mobilization regimen, and the type of previous hernia repair** were validated as statistically significant risk factors. Regarding the latter, a strong positive correlation with hernia recurrence was observed.

Additional noteworthy associations include a **statistically significant, strong positive correlation between the type of incision and patient age by decades** ( $r = 0.520$ ,  $p = 0.041$ ), a **statistically significant, moderate positive correlation between the type of incision and time to hernia occurrence (in months)** ( $r = 0.491$ ,  $p = 0.039$ ), and a **statistically significant, weak positive correlation between scar characteristics and patient sex** ( $r = 0.288$ ,  $p = 0.025$ ).

Analyses addressing the relationship between defect size and the need for surgical drainage, antibiotic and anticoagulant prophylaxis, and length of hospital stay, as well as those evaluating the risk of postoperative complications, provide substantial practical relevance.

A total of **64 postoperative complications** were recorded and classified according to the **Clavien–Dindo classification**, with **mild complications (grades I–II)** predominating

(71.1%). **Severe complications (grade IV)** were observed in **28.0%** of cases, while **no grade III complications were reported**. The mean length of hospital stay was **6.24 ± 3.25 days**.

The economic analysis revealed a **mean direct cost of BGN 2041.27 ± 1530**, with a minimum value of **BGN 568.38** and a maximum of **BGN 8241.51**. The mean total cost was calculated at **BGN 2249.24 ± 1369**. Extremely strong correlations were identified between the **number of inpatient days and direct costs (r = 0.954; p < 0.000)**, as well as between **direct and total costs (r = 0.928; p < 0.01)**.

The regression model showed that length of hospitalization, duration of antibiotic therapy, and defect area are statistically significant independent predictors of direct costs (**R<sup>2</sup> = 0.86**). Based on the estimated multivariable linear regression model, the following conclusions were drawn:

1. Each additional inpatient day increases direct costs by **BGN 268.34**;
2. Each additional day of antibiotic therapy increases direct costs by **BGN 97.74**;
3. Each additional increase in defect area by **1 cm<sup>2</sup>** results in an increase in direct costs by **BGN 0.578**.

As a minor but constructive critical remark, it may be noted that despite the extensive and up-to-date reference list (**418 references**), the proportion of sources published in Cyrillic is relatively limited. Furthermore, a more detailed presentation of the authors' follow-up results on hernia recurrence and their relationship with the specific operative techniques used in the department would be desirable, beyond the percentage-based reporting of complications according to the Clavien–Dindo classification. These remarks, however, do not diminish the dissertation's overall scientific and practical value and may serve as a foundation for future research.

The dissertation abstract is structured in accordance with the formal requirements, and its content fully aligns with the thesis.

## **7. Conclusions and Contributions**

The conclusions are logically formulated and consistently derived from the presented results.

The scientific contributions possess both confirmatory and clearly defined applied value, with direct relevance to everyday surgical practice. Of particular significance are the contributions related to the development of an economic analysis of the healthcare burden associated with postoperative hernias, as well as the formulation of a management algorithm applicable to the conventional surgical treatment of postoperative hernias.

## **8. Publications**

The published output is directly related to the doctoral dissertation topic and consistent with its subject matter.

## **9. Final Conclusion and Recommendation**

The doctoral dissertation of **Dr. Vyara Dimitrova Grigorova** represents a complete, relevant, and scientifically sound research work, demonstrating thorough theoretical knowledge, analytical thinking, and proficient command of the clinical material.

The PhD candidate meets the requirements of the Law on the development of the academic staff in the Republic of Bulgaria and the Regulations for its implementation. No evidence of plagiarism has been identified.

Based on the above, I hereby give my **positive evaluation** of the doctoral dissertation and **recommend that the Scientific Jury award Dr. Vyara Dimitrova Grigorova the educational and scientific degree *Doctor* in the professional field 7.1. Medicine.**

Заличено на основание чл. 5,  
§1, б. „В“ от Регламент (ЕС)  
2016/679

03.01.2026

Sofia

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