

To: Doctoral School

According to Order No. P-109-348/ 18.07.2023

by the Rector of MU - Varna"

REVIEW

of the dissertation

**"Advantages and disadvantages
of different thoracoscopic approaches in the diagnosis and
treatment of pleural effusions"**

To Dr. Katerina Marinova Marinova,
Doctoral student at the Department of Surgical Diseases, MU - Varna,
for the award of the academic degree 'Doctor'
in the scientific specialty Chest Surgery - 03.01.44,
professional field 7.1 Medicine."

Reviewer: Prof. Dr. Rosen Evgeniev Madzhov, D.Sc.,
Head of the Department of Surgical Diseases,
Medical University - Varna"

Dr. Katerina Marinova's dissertation addresses a serious and significant clinical issue – Pleural Effusions.

Pleural effusion is one of the most common diseases diagnosed and treated in the fields of pulmonology and thoracic surgery. The frequency and prevalence of the disease depend on numerous factors, including age, gender,

comorbidities, and geographical location. There exist numerous and diverse possibilities for diagnosing and treating pleural effusions, but the precise selection of the intervention type and determining the timing of the procedure are of utmost importance for optimizing the diagnostic and therapeutic process.

In the past decades, there has been a significant increase in the application of minimally invasive techniques, aiming for excellent postoperative outcomes, reduced post-thoracotomy pain, improved cosmetic results, and shortened hospital stays. Video-assisted thoracoscopic surgery (VATS) techniques contribute to a comprehensive solution for pleural effusion problems and offer personalized approaches tailored to each patient. These methodologies have become the method of choice for nearly the entire spectrum of thoracic surgeries.

In recent years, the development of imaging diagnostics and minimally invasive methods has become a crucial addition to the modernized surgical approaches within the comprehensive diagnostic and therapeutic process. An evaluation of the diagnostic and therapeutic value of each method is necessary, taking into account the benefits/risks/results ratio and the quality of life after each procedure, all while adhering to clear indications and criteria

The dissertation comprises **125** standard pages. The bibliography includes **228** references (mostly from the last 10 years), with **10** in Cyrillic and **218** in Latin script.

The presentation is enhanced by **18** tables, **10** diagrams, and **20** images.

The literature review covers the following topics: definition, etiology, classifications, diagnostic procedures - imaging, invasive, minimally invasive (indications and contraindications); VATS techniques in the diagnosis and treatment of pleural effusions; therapeutic algorithm, adequacy of control, and prognosis.

The doctoral candidate demonstrates a comprehensive understanding of the issue as a whole - referencing numerous prominent authors and schools that delve into the matters of lung and pleura diseases.

The author's OBJECTIVE is:

"To present and discuss the advantages and disadvantages of various thoracoscopic approaches in the diagnosis and treatment of pleural effusions, while personalizing the selection of a specific access and technique based on the nature and type of pleural effusion, aiming to achieve an optimal result."

The overall objective is well-formulated, considering the entire dissertation work. To achieve the main goal, the author sets the following **4 tasks**:

1. To explore global experiences and trends in the diagnostic and therapeutic approach, as well as contemporary treatment methods for pleural effusions.

2. To analyze and refine, based on personal experience, the indications and contraindications for the utilization of thoracoscopic techniques in diagnosing and treating pleural effusions.

3. To identify the advantages and disadvantages of each thoracoscopic approach based on the location, type, and nature of the pleural effusion.

4. To develop a diagnostic and therapeutic algorithm for patients with pleural effusions, aligning it with modern trends and the practical reality in Bulgaria

The tasks are well formulated, and the development of the dissertation follow their implementation.

The subject of the study includes **325** patients hospitalized at the Clinic of Thoracic Surgery at UMBAL "St. Marina" - Varna, with clinical data on pleural effusions of various origins during the period 2012 - 2023.

A retrospective analysis has been performed on 207 males and 118 females, aged between 15 and 88 years. VATS (Video-Assisted Thoracoscopic Surgery) technique has been applied to all of them.

The most affected age groups are patients in the 5th and 6th decades of life. Among all the patients with pleural effusion treated thoracoscopically, **173** cases demonstrate an inflammatory nature, while **152** cases show a malignant character of the effusion. Among them, **21** cases are of primary malignancy, while the remaining **131** cases are secondary. The most common primary origins are breast cancer, lung cancer, lymphomas, gastrointestinal tumors, and ovarian carcinomas. Preoperative staging has been conducted according to the ASA (American Society of Anesthesiologists) classification.

The type of surgical approach has been chosen based on the nature of the effusion, including its etiology, character (free or localized), associated pathology, the patient's physique, and the planned volume of surgical intervention. Clinical, laboratory, imaging, instrumental, and statistical methods have been used, along with minimally invasive techniques for the diagnosis, treatment, and control of pleural effusion.

Out of **472** patients with pleural effusion, minimally invasive thoracoscopic techniques with different approaches were performed in **325** cases. The most common was the two-port approach at 60%, followed by the single-port approach at 32%, and the multi-port approach at 8%. Intraoperative complications necessitating conversion to an open surgical approach were observed in only one patient.

In all patients, a faster recovery and shorter hospital stay were observed compared to those treated with open surgical techniques, with an average difference of 2-4 days.

The main advantages of VATS techniques, as observed, fully align with those described by leading authors in the global literature. These include reduced surgical trauma, shorter hospitalization, improved cosmetic outcomes, fewer postoperative complications (observed in 18 patients), lower mortality rates, better quality of life, and a faster return to both domestic and professional duties.

The detailed preoperative discussion of the advantages and disadvantages of each thoracoscopic approach, along with consideration of all aspects related to the specific local pathology as well as the overall condition of each patient, provides an opportunity for a personalized and optimized decision regarding the appropriate surgical treatment. This approach favors final outcomes.

All of this has been systematized and illustrated in a proposed treatment algorithm for pleural effusions using VATS techniques.

The conclusions, totaling seven in number, are well formulated and they align with the achievement of the main goal and tasks set by the doctoral candidate.

The contributions that the dissertation has yielded, presented by the candidate at the end of the work, hold both scientific and practical significance. They stem from the candidate's personal efforts as well as the collective work of the Clinic of Thoracic Surgery at UMBAL "St. Marina" - Varna.

The abstract is excellently organized and fully reflects the essence of the dissertation work. The meticulous attention to outstanding stylistic and design execution makes a very positive impression, along with the quality of printing.

Dr. K. Marinova graduated in medicine from Medical University - Varna in 2012. Since 2014, she has been an assistant in the Department of Surgery, Clinic of Thoracic Surgery, Medical University - Varna. Since November 2020, she has been a regular doctoral student at the Department of Surgery, Medical University - Varna. She obtained a recognized specialty in thoracic surgery in 2019 and a specialty in general surgery in 2023. She holds a Master's degree in Health Management from 2016.

Dr. K. Marinova is proficient in English and German languages. She is a member of the Bulgarian Society of Surgeons/BSS/ and the Bulgarian Medical Association.

Dr. K. Marinova has authored 3 publications related to the dissertation work, being the first author in two of them. She has also presented posters and co-authored reports at scientific conferences and symposiums.

CONCLUSION

The presented dissertation work is comprehensive and addresses the complexities surrounding the diagnosis, indications, methods, and treatment of surgical patients with pleural effusions. It outlines modern perspectives on these aspects. A diagnostic and therapeutic algorithm has been developed and implemented in clinical practice. The work includes results with a contributory nature and holds potential for publication.

Dr. K. Marinova fully meets the minimum national requirements according to LDASRB and its accompanying regulations, as well as the regulations of Medical University - Varna.

All of this gives me the right and reasons to recommend to the members of the Academic Board to give their **positive votes** and award the academic degree of "**Doctor**" to Dr. Katerina Marinova.

01.09.23

Varna

Reviewer:

/Prof. Rossen Madjov, MD, PhD, DSc/

