

REVIEW

by

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External member of the Scientific Jury based on order No. 109-383/19.09.2025 of the Rector of the Medical University "Prof. Dr. Paraskev Stoyanov", Varna, Bulgaria

Subject: defense for the acquisition of the scientific degree "Doctor of Sciences" in the scientific specialty "Surgery" (field of higher education "7. Health and Sports", professional direction "7.1. Medicine") by Assoc. Prof. Yanko Georgiev Yankov, MD, PhD - Head of the Clinic of Maxillofacial Surgery at the University Hospital "St. Marina", Varna, Bulgaria and Associate Professor at the Department of General and Operative Surgery of the Faculty of Medicine at the Medical University "Prof. Dr. Paraskev Stoyanov", Varna, Bulgaria.

The set of documents that I received meets the requirements of the Act on the Development of the Academic Staff of the Republic of Bulgaria, the Regulations for the Implementation of the Act on the Development of the Academic Staff of the Medical University "Prof. Dr. Paraskev Stoyanov", Varna, Bulgaria for the acquisition of the scientific degree "Doctor of Sciences" in the scientific specialty "Surgery".

1. Analysis of the professional development of the dissertation candidate

Assoc. Prof. Yanko Georgiev Yankov, MD, PhD graduated with a Master's degree in Medicine at the Medical University "Prof. Dr. Paraskev Stoyanov", Varna, Bulgaria in 2014. In 2016, he graduated with a Master's degree in Health Management at the same educational

institution. Since 2015, he has been working at the Clinic of Maxillofacial Surgery at the University Hospital "St. Marina", Varna, Bulgaria, and in 2020 he acquired a specialty in Maxillofacial Surgery, and since March 2025 he has been the head of the same. From February 2019 to October 2019, he was a part-time assistant professor in Oral and Maxillofacial Surgery at the Department of General and Operative Surgery and the Department of Oral Surgery at the Medical University "Prof. Dr. Paraskev Stoyanov", Varna, Bulgaria, and from October 2019, he won a competition and was appointed as a full-time assistant professor in Maxillofacial Surgery at the same department. During the period 2021 - 2022, he was an independent doctoral student at the Department of General and Operative Surgery, Faculty of Medicine, specialty "Surgery" at the Medical University "Prof. Dr. Paraskev Stoyanov", Varna, Bulgaria, and in December 2022 he acquired the educational and scientific degree "doctor of philosophy" (PhD), successfully defending a dissertation on the topic "Procalcitonin and delta neutrophil index levels in the surgery of head and neck inflammatory diseases". In July 2023, he won a competition for chief assistant in maxillofacial surgery and was appointed as such in the Department of General and Operative Surgery of the Medical University "Prof. Dr. Paraskev Stoyanov", Varna, Bulgaria. Since December 2025, after a competition, he has been an associate professor in maxillofacial surgery in the same department. He teaches lectures and exercises on maxillofacial surgery to fourth and fifth year medical and dental students in Bulgarian and English. From all this it is clear that Assoc. Prof. Yanko Georgiev Yankov, MD, PhD actively participates in the academic activities of the Medical University of Varna, Bulgaria.

2. Scientific activity

For the defense of the scientific degree "Doctor of Sciences" Assoc. Prof. Yanko Georgiev Yankov, MD, PhD presents scientific works that fully meet the scientometric requirements of the Medical University "Prof. Dr. Paraskev Stoyanov", Varna, Bulgaria for the acquisition of the scientific degree "Doctor of Sciences", specified in the academic transcript certified (№731/11.09.2025) by the Library of the Medical University of Varna, Bulgaria (№9 from the list of documents submitted by the candidate). The scientific activity of Assoc. Prof. Yanko Georgiev Yankov, MD, PhD includes the following scientometric indicators:

2.1. dissertation work for the acquisition of the scientific degree "Doctor of Sciences" (B2) - 1 issue;

2.2. full-text publications published in scientific journals, referenced and indexed in world-renowned databases with scientific information (D7) - 5 issues;

2.3. full-text publications published in non-refereed journals with scientific review (G8) – 5 issues.

For easier understanding and analysis of the scientific publications presented by the doctoral candidate, they are entered in Table 1 and compared with the minimum scientometric indicators required for the acquisition of the scientific degree "Doctor of Science".

Group of indicators	Number of publications in the group	Minimum number of points required to obtain the scientific degree "Doctor of Science"	Points with which Assoc. Prof. Yanko Georgiev Yankov, MD, PhD participated in the defense for the acquisition of the scientific degree "Doctor of Sciences"
B2	1	100	100
G7	5	100	171
G8	5		

Table 1. Minimum required points by groups of indicators and points with which Assoc. Prof. Yanko Georgiev Yankov, MD, PhD participated in the defense

The **dissertation** is on the topic "Lymph nodes in maxillofacial surgery – normal and most common diseases" and is 222 pages long. It is illustrated with 93 tables, 41 figures and 9 images. The bibliography includes 428 literary sources, which are in English. The **abstract** to it is 76 pages long.

In the dissertation Assoc. Prof. Yanko Georgiev Yankov, MD, PhD sets five **goals**. They are: to perform a modern and detailed cytological, histological, anatomical-topographical and anatomical-oncological description of the regional lymph nodes in the head

and neck area, with an emphasis on their importance in maxillofacial surgery; to analyze the diseases of the lymph nodes in the maxillofacial area in patients hospitalized in the Clinic of Maxillofacial Surgery, with a distribution by gender, age and clinical diagnosis; to classify lymph node diseases into main diagnostic groups and to study their frequency and characteristics in clinical practice; to study the etiological bacterial spectrum in patients with abscesses and phlegmons originating from lymph nodes of the head and neck; to study antibiotic resistance in patients with infectious diseases of the lymph nodes, with an analysis of the relationship between gender, age and type of isolated microorganism.

To achieve these goals, he sets 14 **tasks**, which are: to conduct a systematic review of the modern scientific literature concerning the cytological, histological and anatomical structure of the lymph nodes in the head and neck region; to describe the topographic location of the lymph nodes in the head and neck region and to systematize their distribution by anatomical levels in view of their clinical significance; to analyze the anatomical-oncological role of the lymph nodes as regional structures in malignant neoplasms in the maxillofacial region; to create a retrospective database of patients with lymph node diseases who have passed through the Clinic of Maxillofacial Surgery for a 10-year period; to perform a statistical analysis of the frequency of lymph node diseases in the maxillofacial region depending on the age, sex and clinical diagnosis of the patients; to perform a detailed clinical analysis of representative cases from each main diagnostic group; to prepare a diagnostic classification of diseases of the lymph nodes in the maxillofacial region by etiology - nonspecific, specific, reactive and chronic lymphadenitis, lymphoproliferative and metastatic diseases; to study the distribution of patients according to the formed diagnostic groups and their frequency; to compare the clinical features of each group in terms of gender, age and localization of the involved lymph nodes; to determine and analyze the microbiological spectrum in patients with purulent-inflammatory processes originating from the lymph nodes of the head and neck; to identify the main bacterial causative agents of lymphogenic abscesses and phlegmons and to determine their frequency; to process the results of the antibiograms of patients with infectious diseases of the lymph nodes included in the study, and to assess the degree of antibiotic resistance to the main groups of antimicrobial agents; to analyze the relationships between antibiotic resistance, gender, age of patients and the type of isolated microorganisms; to offer substantiated recommendations for empirical selection of antimicrobial treatment for infectious diseases of the lymph nodes in the maxillofacial region.

In order to fulfill these tasks and achieve the goals he set, the dissertation candidate retrospectively examined all patients with diseases of the lymph nodes of the head and neck who were hospitalized for a ten-year period (01.01.2015-31.12.2024) in the Clinic of Maxillofacial Surgery at the University Multi-profile Hospital for Active Treatment "St. Marina" EAD - Varna. These are a total of 563 patients with the following diseases: actinomycosis, sarcoidosis, tuberculosis, felinosis, metastatic involvement of the lymph nodes, lymphoproliferative diseases (Hodgkin's and non-Hodgkin's lymphoma), chronic reactive lymphadenitis, abscessed lymph nodes and abscesses and phlegmons originating from them, and acute lymphadenitis. In the first eight diseases, the treatment of the patients was surgical, and in the group of patients with acute lymphadenitis of the head and neck, the therapy was entirely conservative.

By carrying out these tasks, Assoc. Prof. Yanko Georgiev Yankov, MD, PhD comes to the following 13 important **conclusions**: the number of hospitalized patients with head and neck lymph node diseases varied cyclically between 2015 and 2024 - with an increase until 2019, a decline during the Covid-19 pandemic (2020-2021), and recovery thereafter; there is no long-term and clearly expressed trend in the number of hospitalized patients with head and neck lymph node diseases, but rather short-term fluctuations reflecting external factors (such as the Covid-19 pandemic) and individual variability; hospitalized patients with head and neck lymph node diseases treated surgically are almost four times more than those treated conservatively; the most common diseases of the lymph nodes of the head and neck among the entire studied population of hospitalized patients are oncological, and the rarest are felinosis and tuberculosis; in hospitalized men with diseases of the cervical lymph nodes, malignant diseases dominate - lymphomas and metastases, and in hospitalized women - lymphoproliferative and acute nonspecific lymphadenitis; in hospitalized men, there are higher average values, but fewer different diseases of the lymph nodes of the head and neck, while women show a greater variety of diagnoses, but with a more even distribution between them; isolated Gram-positive microorganisms in hospitalized patients with acute lymphadenitis of the head and neck and with abscesses and phlegmons arising from them are over ten times more than Gram-negative; age itself is not a significant predictor of antibiotic resistance in most cases of acute purulent inflammation of the lymph nodes of the head and neck in hospitalized patients. The differences in sensitivity are mainly due to the type of isolated microorganism, and not to the age of the patients; in even small representative samples (nine cases for levofloxacin and seven for meropenem), all isolates studied in

purulent lymphadenitis of the head and neck showed 100% sensitivity to levofloxacin and meropenem - antibiotics with universal sensitivity; intestinal bacteria isolated in acute purulent infections of the lymph nodes of the head and neck in hospitalized patients remain highly sensitive to a wide range of antibiotics, while in patients with isolated staphylococci, the latter often exhibit partial or high resistance and require a more precise choice of therapy; there is no antibiotic to which both staphylococci and intestinal bacteria are absolutely resistant; a statistically significant gender dependence was found for piperacillin - the proportion of sensitive isolates is more than three times higher in men than in women with acute purulent lymphadenitis; Males with acute purulent lymphadenitis have higher sensitivity to most antibiotics, while females show higher levels of resistance.

With this, he achieved nine outstanding **contributions**: a complete cytological, histological and anatomical-topographic analysis of the regional lymph nodes in the head and neck region was performed, with an emphasis on their importance in maxillofacial surgery; a detailed analysis of the age and gender demographic distribution of patients with lymph node diseases in the maxillofacial region was performed; for the first time in Bulgaria, a large and detailed comparison was made between surgical and conservative treatment in patients with lymphadenopathy in the maxillofacial region, which reflects the significant predominance of surgical interventions; the etiological bacterial spectrum of acute purulent lymphadenitis of the head and neck and the abscesses and phlegmons arising from them was described; an assessment of the antibiotic resistance of the isolated strains in purulent lymphadenitis of the head and neck was made, which allows for a more precise choice of antibiotic treatment; recommendations have been prepared for clinical practice in the treatment of patients with metastatic involvement of the lymph nodes in the neck; high antibiotic sensitivity of intestinal bacteria and contrasting partial to high resistance of staphylococci to a number of antibacterial agents in purulent infections of the lymph nodes in the maxillofacial region have been proven, which may assist in the selection of their empirical antibacterial treatment; gender-specific antibiotic sensitivity has been proven in acute purulent lymphadenitis of the head and neck, against which the antibiotic piperacillin is three times more effective in men than in women; recommendations have been formed for optimizing antibiotic therapy in acute purulent lymphadenitis in the maxillofacial region, based on established patterns in sex-specific resistance - men are more sensitive to most antibiotics, while women require more precise selection.

In addition to the dissertation for the degree of Doctor of Science, the provided and certified academic reference shows that Assoc. Prof. Yanko Georgiev Yankov, MD, PhD is the author of a dissertation for the degree of Doctor of Science on the topic "Procalcitonin and delta neutrophil index levels in the surgery of head and neck inflammatory diseases", as well as a published book based on a defended dissertation for the degree of Doctor of Science on the topic "Application of procalcitonin and delta neutrophil index in maxillofacial surgery" (ISBN: 978-619-221-428-9).

Of the scientific publications for participation in the defense, published in collaboration with colleagues, he is an **independent author** of one full-text publication in a scientific publication, referenced and indexed in world-renowned databases of scientific information.

Of the scientific publications for participation in the defense, published in collaboration with colleagues, he is the **first author** of two full-text publications in scientific publications, referenced and indexed in world-renowned databases with scientific information, and five full-text publications in non-referenced publications with scientific review.

Of the scientific publications published in collaboration with colleagues, Assoc. Prof. Yanko Georgiev Yankov, MD, PhD is the **second author** of two full-text publications in scientific publications, referenced and indexed in world-renowned databases with scientific information.

For participation in the current defense, Assoc. Prof. Yanko Georgiev Yankov, MD, PhD presents through the attached academic reference 7 citations in full-text publications in scientific journals, referenced and indexed in world-renowned databases of scientific information (indicator "D10"), with self-citations excluded, and thus he collects the total required number of 105 points (7 citations x 15 points) from indicators D10-12.

As of today (14.10.2025) the individual h-index of Assoc. Prof. Yanko Georgiev Yankov, MD, PhD is 9 and has a total of 251 citations, of which 34 for 2023, and 103 for 2024 and 114 for 2025 (Google Scholar - <https://scholar.google.com/citations?user=58wHinwAAAAJ&hl=en>).

The scientific interests of the dissertation candidate can be combined in the following clinical areas:

• **Etiological causes of acute lymphadenitis of the head and neck** – B2.1. (dissertation for the acquisition of the degree of Doctor of Sciences), G7.1., G7.5.

The articles that he presents in this section are original works related to the study of the etiological bacterial spectrum of patients from the pediatric population (under 18 years of age) with acute purulent infections of the lymph nodes of the head and neck (G.7.1) and of the etiological tooth for the occurrence of abscesses and phlegmons of the head and neck of odontogenic origin in patients over 18 years of age (G7.5.). Data on similar studies conducted in Bulgaria and on a large number of patients have not been found in the medical literature, which shows the originality of the studies conducted, including that in the dissertation itself, in which the observations of the patients cover a ten-year period of study.

• **Metastatic involvement of the lymph nodes of the head and neck** – B2.1. (dissertation for the acquisition of the degree of Doctor of Sciences), G7.2.

The dissertation and the clinical case provided by the dissertation author (G7.2.) examine the involvement of the lymph nodes and extranodal structures in malignant processes both in the maxillofacial region and in those with more distant localization. In these scientific works (mostly in the dissertation work), the malignant involvement of the cervical lymph nodes in individual oncological diseases, their prognosis, diagnosis and behavior algorithm are described and analyzed in detail, comparing older scientific data with new ones available in the world literature.

• **New markers for the study of inflammatory diseases of the head and neck** – G7.3., G7.4.

The original article, designated as “G7.3.” in the academic reference, examines patients with odontogenic and non-odontogenic abscesses of the head and neck and analyzes the role of the inflammatory blood markers procalcitonin (PCT) and C-reactive protein (CRP) in the context of the bacterial pathogens that were isolated during the microbiological examination of the sample of evacuated pus taken during surgical treatment. For more precise analysis, the isolated microorganisms are divided into Gram-positive and Gram-negative. The study shows that the ratio of mean platelet volume to platelet count (MPV/PLT), known as MPI, is a more accurate diagnostic indicator than MPV and PCT alone when it comes to distinguishing isolated Gram-positive from Gram-negative bacteria.

The study, described and analyzed in the original article under number “G7.4.” in the academic reference, examines inflammatory markers (NLR – neutrophil/lymphocyte ratio and MPV – mean platelet volume) in patients with odontogenic and non-odontogenic abscesses of the head and neck. They are compared with time-tested indicators such as white blood cell count (WBC), C-reactive protein (CRP) and procalcitonin (PCT). The results show that in odontogenic abscesses, CRP and neutrophil count are higher, while in non-odontogenic abscesses, platelet count (PLT), lymphocyte count and PCT are higher. The study highlights that combining CRP and PCT with NLR and MPV can provide a significantly better and more precise assessment of the severity of infections and help predict the outcome of the disease in patients.

• **Lymphatic cervical dissection** – B2.1. (dissertation for the award of the degree of Doctor of Science), G8.1.

Both in the dissertation for the award of the degree of Doctor of Science (B2.1.), and in the review article under number “G8.1.” in the academic reference, the metastatic involvement of the cervical lymph nodes in malignant tumor processes, their prognosis, difficulties in diagnosis and the algorithm of their behavior are described in detail. The most common localizations of cervical metastases are described in detail depending on the localization of the primary process, as well as the types of cervical lymphatic dissections that are applied in their treatment. The individual types of cervical lymphatic dissections, their advantages and disadvantages, as well as the main stages of the surgical technique of their implementation are described and analyzed.

• **Lymphoproliferative diseases in the maxillofacial region** – B2.1. (dissertation for the award of the degree of Doctor of Science), G8.2., G8.3.

This section contains the dissertation for the award of the degree of Doctor of Science (B2.1.) and two review articles (G8.2. and G8.3.), which describe and analyze in detail the main lymphoproliferative diseases that are characteristic of the maxillofacial region. They outline the similarities and differences between Hodgkin's and non-Hodgkin's lymphomas, their manifestations, features of diagnosis and the main directions of their treatment. Their etiology and clinical manifestations are described in detail, as well as the tissues and organs of the head and neck that they involve.

• **General data on lymphadenopathy – B2.1.** (dissertation for the award of the degree of Doctor of Science), G8.4.

Both in the dissertation for the degree of Doctor of Science (B2.1.), and in the review article under number "G8.4." in the academic reference, the essence of lymphadenopathy in humans is described in great detail, emphasizing those in the head and neck area, which are of fundamental importance for the clinical practice of the maxillofacial surgeon, emphasizing the individual types of lymph node diseases, the causes that cause them, their clinical manifestations, difficulties in the diagnostic and therapeutic plan and the role of the maxillofacial surgeon in the therapy of these diseases.

• **Oral leukoplakia and its relationship with the lymph nodes of the head and neck - G8.5.**

Oral plaque is a relatively common disease in the maxillofacial area, which, if not treated promptly, can become malignant. This feature of it is discussed in the review article under number "G8.5." in the academic reference. The same article describes in detail the nature of the disease, its clinical manifestations, diagnosis and treatment. The valuable thing about the article is that it examines oral leukoplakia in the context of the lymph nodes of the head and neck and their involvement in this precancerous condition, and provides recommendations and guidelines for behavior in cases of absence and presence of lymphadenopathy associated with oral leukoplakia.

3. Teaching and learning activities

Assoc. Prof. Yanko Georgiev Yankov, MD, PhD is an associate professor of maxillofacial surgery at the Department of General and Operative Surgery of the Faculty of Medicine at the Medical University "Prof. Dr. Paraskev Stoyanov", Varna, Bulgaria, where he conducts lectures and exercises on maxillofacial surgery for students of medicine and dentistry in Bulgarian and English. He examines dental students in semester and state exams, and is a regular member of the examination committee for the state exam in special surgery for dental students.

4. Conclusion

According to the scientometric and teaching indicators provided to me, in accordance with the Law on the Development of the Academic Staff of the Republic of Bulgaria and the Regulations on the Development of the Academic Staff of the Medical University "Prof. Dr. Paraskev Stoyanov" Varna, Bulgaria Assoc. Prof. Yanko Georgiev Yankov, MD, PhD fully meets the requirements for acquiring the scientific degree "Doctor of Sciences".

Based on the above, I give my **positive assessment** to the dissertation and recommend to the members of the Scientific Jury to award **Assoc. Prof. Yanko Georgiev Yankov, MD, PhD** the scientific degree "**Doctor of Sciences**" in the **scientific specialty "Surgery"**, field of higher education "7. Health and Sports", professional direction "7.1. Medicine".

14.10.2025

City of Varna

Prof. Nikola Yordanov Kolev, MD, ~~PhD~~, DSc

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