

## STATEMENT

by Prof. Dr. Penka Peneva Stefanova - Peeva, MD, member of the Scientific Jury appointed

by

Order No. RD-26-2088/05.10.2022 of the Executive Director and Decision of the Scientific Council with Protocol No. ND-01-3/21.09.22 of the University Hospital „N.I.Pirogov“ – Sofia

Subject:

Procedure for awarding the degree of Doctor of Education and Science to Dr. Edmond Videnov Rangelov for his dissertation on „**Current management and application of minimally invasive surgery in the treatment of undescended, nonpalpebre testis in childhood**“ in the scientific specialty "Pediatric Surgery" in the professional field 7.1. Medicine in the field of higher education 7. Health and Sport.

### **Biographical data**

Dr. Edmond Videnov Rangelov completed his higher education as a Master of Medicine at the Medical University - Sofia. He holds two medical specialties - "General Surgery" and "Pediatric Surgery"- acquired in 2002 and 2012, respectively. In addition, he has increased his professional qualification in the field of laparoscopic surgery with additional specialized trainings. He is a member of the Society of Paediatric Surgery and SIOP EUROPE.

Dr. Rangelov started his professional development as a doctor at the „R. Angelova“ Hospital in Pernik. At present he holds the position of Head of the Department of Pediatric Abdominal Surgery at the University Hospital "N.I.Pirogov". He has 18 years of work experience. He speaks German and English.

### **The dissertation**

The dissertation on "**Current management and application of minimally invasive surgery in the treatment of undescended, nonpalpebre testis in childhood**" is written in 128 pages, illustrated by 54 figures and 31 tables. The bibliographic reference contains 181 sources, 180 in Latin and 1 in Cyrillic. The structure of the dissertation meets all the requirements of the approved Bulgarian State Standard, it contains 12 separate parts as follows : Introduction, Literature review, Aim and objectives, Clinical material, Methodology, Results and discussion by groups, Discussion, Conclusion, Conclusions, Contributions, Publications and participation in congresses, Booklist. In addition to the therapeutic and diagnostic methodology, the doctoral student used a number of analytical statistical and mathematical methods, which lead to a clear presentation of the results obtained, divided into two clear groups: 43 children with non-palpebre testis operated minimally invasively and 53 operated with conventional method.

This dissertation focuses on the use of laparoscopic technique in children with non-palpebre testis and the new diagnostic and treatment options it provides. The processes of improvement of the technical characteristics of the minimally invasive device and its mastery by surgeons are traced, in a clear and definite way. Advances in anaesthetic equipment and monitoring are also noted. The study demonstrates that significant progress has been made in laparoscopy in pediatric surgical practice related to the treatment of nonpalpebre testis. The entire diagnostic and treatment process leading to laparoscopic intervention is described in detail and step by step to arrive at a proposed algorithm for surgical management based on experience and analysis of the results obtained. The complexity of the treatment of NPT, the limitations of instrumental studies, and the possibility of false-positive or false-negative results when using CT and MRI are considered.

**The aim** of this dissertation is to follow the process of implementation of minimally invasive surgery for non-palpebre testis and its comparative evaluation with classical surgical methods. The tasks that arise are the following :

1. To determine the sensitivity and specificity of laparoscopy in localizing NPT.
2. To evaluate the therapeutic role of laparoscopy and types of laparoscopic techniques in different types of NPT.
3. To design and implement a diagnostic and treatment algorithm for the management of children with undescended, nonpalpebre testis.
4. To evaluate early and late outcomes.
5. To analyze the learning curve.

For the implementation of the mentioned tasks, 96 patients treated in the Pediatric Surgery Clinic at the University Hospital "N.I. Pirogov" for an eight-year period of time - 2013-2021 were examined. For each patient included in the study, data were collected using a scorecard containing the following information: general data; anamnestic data - onset of the disease, symptoms, treatment until admission to the department; clinical data - general and local status; hematological and biochemical tests - hemoglobin, hematocrit, leukocytes, platelets, differential fight, SUE, CRP ; Diagnostic imaging studies - abdominal ultrasonography; surgical treatment - timing of surgery, choice of operative method, intraoperative findings and pathohistological diagnosis; complications, reoperations, length of stay; treatment outcome - quality of life;

In his dissertation, Dr. Rangelov highly appreciates diagnostic laparoscopy as the most reliable diagnostic method, which is a prerequisite for making an adequate decision on therapeutic management, as it clearly demonstrates the anatomy and provides visual information on the basis of which a final decision on subsequent interventional intervention can be made. For example, in patients with intra-abdominal testes or intraabdominally blind-ending testicular vas and vas deferens structures, this technique provides a definitive diagnosis quickly, a direct surgical approach according to testicular location, and avoidance of unnecessary abdominal cavity exploration in cases of "vanishing testis".

The role of laparoscopy in high-grade intra-abdominal testicular masses, in which the two-stage Fowler-Stephans method has been used successfully, is highly appreciated. In laparoscopy-assisted

and fully minimally invasive surgical procedures for intra-abdominally located testes, high abdominal, retroperitoneal liberation of testicular vessels and the use of Prentiss manoeuvre, significantly reduced traction stress, resulting in avoidance of circulatory disruption in the descended testis as well as its potential for retention.

The test determining intraabdominal testicular mobility during diagnostic laparoscopy is noteworthy as it provides essential information on which to base the surgical approach. The contralateral internal ring was used optimally as an anatomic landmark to assess intraabdominal testicular motility and the length of the testicular vessels and vas deferens.

No preoperative hormonal therapy was administered to the operated children included in the study. The author believes that such can be applied only in palpebre undescend testis with high scrotal placement. In NPT, such therapy is warranted only postoperatively. Pregnyl therapy was administered in three of the operated patients who entered the study and the following results were found: in one of the children with a high scrotal testis, the latter descended into the scrotum and remained there, in the second patient with the same postoperative testicular location, its retention in the scrotum had a temporary effect, and in the third child no effect of hormone therapy was seen in the postoperatively inguinally retended testis.

Nine substantiated conclusions are drawn in the dissertation:

1. The laparoscopic method in NPT facilitates the choice of the optimal surgical approach, as this minimally invasive technique provides a detailed view of the anatomy of the abdominal cavity and the possibility of switching to the more atraumatic laparoscopic-assisted surgery compared to conventional surgery;
2. Diagnostic laparoscopy provides a 100% reliable diagnosis leading quickly to a decision on further management of NPT.
3. Completely laparoscopically performed orchidopexy is a perfectly feasible and effective technique for the treatment of low intra-abdominal testicular masses, with excellent results as demonstrated in the present study.
4. Laparoscopic orchidopexy provides a significant success rate, with no significant complications, comparable or less than the open surgical technique.
5. Achieving mobility of the intra-abdominal testicle, by retroperitoneal mobilization and the use of Prentiss manoeuvre in the application of minimally invasive methodology, ensures a high success rate of the surgical operation.
6. Laparoscopic orchidopexy results in reduced postoperative pain and trauma, allows early dehospitalization, and leads to satisfactory long-term outcomes.
7. Imaging modalities such as , CT, MRI, scintigraphy have a limited role in the diagnosis of nonpalpebre undescended testis.
8. The use of hormonal treatment in NPT is appropriate only when testicular localization is specified and then postoperatively when high scrotal standing of the testis is found.

9. Laparoscopic diagnosis and therapy for intra-abdominal and missing testis is incomparably better than that of conventional.

**In conclusion, I believe that**

the dissertation work of Dr. Edmond Videnov Rangelov "**Current management and application of minimally invasive surgery in the treatment of undescended, nonpalpebre testis in childhood**" represents a serious and thorough study with important conclusions and results in favor of improving the diagnostic and therapeutic process of established nonpalpebre testis in children.

The Doctorant has considerable professional experience and proven scientific interests, which give me the basis, without hesitation and in compliance with the requirements of the Law on the Development of Academic Staff in the Republic of Bulgaria and the Regulations for the Development of Academic Staff at the University Hospital „N. I. Pyrogov“- Sofia, to recommend to the members of the esteemed Scientific Jury to award the educational and scientific degree "Doctor" in the scientific specialty "Pediatric Surgery" to Dr. Edmond Videnov Rangelov.

Sincerely,

PROF. DR. PENKA STEFANOVA, MD