Review

by Prof. Dr. Krasimir Dimitrov Ivanov, PhD, BSc Head of the Department of General and Operative Surgery Medical University "Prof. Dr. Paraskev Stoyanov" - Varna

of the dissertation

"Method of temporary decompression of the gastrointestinal tract by forming an enterostomy with T-tube in newborns with low and extremely low birth weight" by:

Dr. Petar Stamov
for the acquisition of a scientific and educational degree "PhD" in the scientific specialty "Pediatric Surgery"

Scientific supervisor: Prof. Dr.Hristo Ivanov Shivachev, PhD

In accordance with Order РД-26-850/08.05.2024 by the Executive Director of University Multiprofile Hospital for Active Treatment and Emergency Medicine 'N. I. Pirogov' EAD, Sofia, I have been appointed as a member of the Scientific Jury for the defense of the dissertation.

The presented set of materials on paper and electronic media is in accordance with the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria (LDASRB) and the Regulations for the Development of the Academic Staff at the University Multiprofile Hospital for Active Treatment and Emergency Medicine „N.I.Pirogov, Sofia.

Biography

Dr. Petar Stamov was born in 1983 in Tetovo, Macedonia. He graduated with full honors from the State Secondary Medical School in Shtip with a specialty in Dental technology. From 2001 to 2007, he studied Medicine at the Medical University 'Prof. Dr. Paraskev Stoyanov' – Varna. In 2015, he obtained a specialty in Pediatric Surgery. Since 2021, he has been working as a pediatric surgeon in the First Surgery Clinic, Department of Pediatric Surgery at University Hospital 'St. Marina' – Varna. He was appointed as an

assistant in the Department of General and Operative Surgery at the Medical University 'Prof. Dr. Paraskev Stoyanov' – Varna in 2022.

The topic of the dissertation is current and dissertationable.

Intestinal obstruction in the neonatal period and early infancy is a common condition. Enterostomies play an important role in the treatment of these conditions. The need to seek and introduce a new method for temporary decompression of the gastrointestinal tract in childhood arises from the fact that most methods used in adults are not applicable to children or are accompanied by a significant rate of complications. There is an increasing frequency of cases where the creation of an enterostomy is necessary, especially in premature newborns with low and extremely low birth weight. This, in turn, is associated with the occurrence of pathology and complications characteristic of the immaturity of the organism. The use of a T-tube for enterostomy in these cases, compared to conventional enterostomy, is a reliable and safe method with no observed complications from the surgical intervention itself. Such a study is the first in Bulgarian scientific literature, highlighting the merits of the present dissertation.

The dissertation is presented in a volume of 106 pages and contains 29 tables and 54 figures. It complies with the accepted requirements for the structure of a dissertation. It includes the following chapters: Introduction (2 pages), Literature Review (24 pages), Aim and Objectives (1 page), Material and Methods (14 pages), Results of Own Research (45 pages), Analysis and Discussion of Own Results (3 pages), Conclusion and Recommendations (3 pages), References (6 pages). The bibliography includes 112 titles in Latin script.

The literature review is well-structured with the following sections: Historical data; Types of stomas and their applications; Indications for enterostomies in children; Technical aspects; Timing of enterostomy closure; Complications of enterostomies and their management; Trends in enterostomies and historical development of enterostomy using a T-tube.

The literature review presented by the doctoral candidate spans 24 pages and comprehensively covers the different types of enterostomies, their indications, timing of enterostomy closure, possible complications, and their management, as well as the latest global trends in the use of T-tubes for enterostomy. The review discusses the issues and viewpoints in the available literature on the comprehensive treatment of patients, including the specific aspects of anesthesia in newborns and infants with intestinal obstruction. It details the various treatment methods described in the literature and the proposed management algorithms.

The literature review is based on 112 cited authors, all of whom are referenced in Latin script. The included articles range from 1957 to 2022, with a predominance of articles from the last ten years that address the issue at hand.

The dissertation sets a clearly formulated Objective, namely: To introduce into clinical practice a method for temporary decompression of the gastrointestinal tract using T-tube in newborns, infants, and children up to 1 year of age and to conduct a comparative study against classical enterostomy.

To achieve this goal, the following tasks are set:

1. To introduce the method for temporary decompression as a routine surgical procedure.
2. To determine the indications for the application of enterostomy using T-tube in newborns and infants.
3. To evaluate the effectiveness and safety of the method.
4. To assess the advantages of the method compared to conventional stoma.

Dr. Stamov's study is retrospective and monocentric. It was conducted in the facilities of MHAT "St. Anna" - Varna and covers the period from 2008 to 2021. The patient population includes 62 patients up to one year of age who underwent enterostomy. The patients are divided into homogeneous groups - Group A operated with enterostomy using T-tube and Group B with conventional enterostomy. This distribution allows for statistically significant analysis.

The material is well-described and illustrated with figures and tables. An analysis of the material from both groups has been conducted, and a comparative study of the results in both treated groups of children has been carried out, using a wide range of diagnostic and therapeutic methods, as well as a set of statistical tools. The methodology of the study is clear and meets the objectives set.

The results are presented in a suitable analytical format. The role of using the method for enterostomy using T-tube on operative time has been evaluated. A shorter operative intervention is noted in the group of patients with applied T-tube, making this technique less invasive in its impact on the immature and compromised patient's body and reducing anesthesia time.

The comparative analysis regarding the time for restoration of continuity shows that in the group of patients with the applied T-tube method, the closure of the stoma occurs

earlier. This leads to earlier full feeding and nutrient absorption, which is a valuable element for the proper growth and development of the pediatric organism.

The lack of complications from the applied method is clearly evident both during the operative intervention and after the removal of the T-tube. Complications observed in the control group with conventional enterostomy occur in approximately 94%. This makes the method safe and less invasive. On the other hand, in patients with enterostomy using T-tube, there is no need for additional operative intervention to close the stoma.

The discussion follows the structure of the Results chapter, allowing the reader to gain clear insights into the author's findings among the data from the global literature.

In the Conclusion chapter, it is rightly noted that the creation of enterostomy using T-tube is a safe and reliable method for definitive or staged treatment. The observed advantages compared to conventional enterostomy are systematically presented.

There are 4 conclusions in total, which are a logical continuation of the stated objectives:

1. A method for enterostomy using a T-tube has been introduced as a routine surgical intervention, following the indications for the application of the method.
2. Indications for the application of the method for temporary decompression of the gastrointestinal tract using a T-tune are present in newborns with low and extremely low birth weight, infants, and children up to one year of age. The method is applicable in conditions such as: congenital intestinal obstruction, meconium ileus, necrotizing enterocolitis, and acquired diseases where necrosis of the small intestine is observed.
3. The effectiveness of enterostomy with a T-tube is superior to conventional enterostomy.
4. Compared to conventional enterostomy, the formation of an enterostomy with a T-tube in newborns, infants, and children up to one year of age is associated with the following advantages:
    - A method characterized by greater conservation, aimed at preserving organ function during the surgical procedure.Compared to conventional enterostomy, it allows for minimally invasive exploration and sanitization of the abdominal cavity, as well as meticulous treatment of the affected area with minimal trauma. There is no need for resection of a long segment of the small intestine.
    - The time for closure of the enterostomy is reduced.
    - There is no need for a repeat surgical intervention to close the enterostomy.

- The operative time and anesthesia duration are reduced accordingly.
- Complications from the applied surgical technique are not observed in the studied sample.
- The placed T-tube can be used for applying medications, as well as contrast agents for monitoring gastrointestinal tract patency.

As contributions to the dissertation, I can recognize:

1. The first comparative study on the use of T-tube for enterostomy in cases of intestinal obstruction.
2. Introduction of this method as a routine minimally invasive approach in patients with low and extremely low birth weight, due to its swift management of acute unstable conditions, reduced operative time, and absence of complications associated with the method.
3. Provision of comprehensive literature data summarizing the safety, effectiveness, capabilities, and limitations of both methods for enterostomy.
4. Conducted a detailed contemporary literature review on indications for enterostomy, types of stomas, their complications, and closure time.
5. Demonstrated the advantages of the T-tube technique over conventional methods as effective, safe, and organ-preserving regarding bowel resection, accompanied by fewer complications.

Dr. Petar Stamov is an assistant professor with potential in the scientific field, respected by students and fellow teachers, a surgeon with deep theoretical knowledge and excellent practical skills. This allows him to prepare a dissertation work of high scientific and practical value, which aims to clarify the significance of the method for creating enterostomy using a T-tube as a routine surgical intervention. This gives me the right to propose to the highly respected Scientific Jury for acquisition by Dr. Petar Stamov of the educational and scientific degree "Philosophiae Doctor".

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