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Review

by Assoc. Prof. Angel Jordanov, MD, PhD

Associate Professor in the Department of Maternity Care

at the Faculty of Health Care of Medical University - Pleven

Regarding a dissertation for the awarding of the academic degree "Doctor" in the scientific specialty Obstetrics and Gynecology (03.01.45), Department of Obstetrics and Gynecology, Medical University – Varna.

Title of the dissertation: **"INTRAPARTUM INJURIES OF THE PELVIC FLOOR AND PERINEUM – RISK FACTORS AND PREVENTION"**

Author of the dissertation: **Dr. Dimitar Lyubchov Cvetkov**

Scientific supervisor: Assoc. Prof. Eliss Hudaim Ismail-Ibisheва, MD, PhD

Scientific consultant: Prof. Emil Georgiev Kovachev, MD, PhD

The presented dissertation consists of 116 standard typed pages and is illustrated with 28 figures, 5 tables, and 4 appendices. The bibliography contains 215 sources, 5 in Cyrillic and 210 in Latin script.

Biographical Data and Academic-Teaching Activities

Dr. Cvetkov graduated in medicine in 2003 from the Higher Medical Institute – Pleven. He obtained his specialization in obstetrics and gynecology in 2011 at the Medical University – Pleven. From 2006 to 2011, he was a resident and assistant at the Medical University – Pleven. From 2012 to 2024, he worked at the Women's Health Hospital "Nadezhda" in Sofia, first as an obstetrician-gynecologist, later as a reproductive medicine specialist. Since September 2024, he has been the head of the IVF center at "Vita" Hospital in Sofia.

Dr. Cvetkov actively participates as a lecturer and organizer in numerous congresses, training meetings, and symposia in the field of minimally invasive and regenerative gynecology.

Relevance of the Topic

Despite advances in medicine, childbirth trauma remains a serious issue in obstetric practice. It can affect both mother and fetus. In mothers, injuries can be physical and psychological.

Physical trauma mainly includes perineal lacerations, which can have short-term or long-term consequences. These injuries occur in up to 90% of vaginal deliveries. They are classified into four degrees—from first degree (rupture of only vaginal mucosa) to fourth degree (injury involving vaginal mucosa, pelvic floor muscles, external and internal anal sphincters, and rectal mucosa). Even after healing, these injuries can often lead to pain, dyspareunia, pelvic floor dysfunction, and mood problems. Third- and fourth-degree tears include obstetric injuries to the anal sphincter (OASI) and injuries to the pelvic floor muscles levator ani, which can cause long-term pelvic floor dysfunction, including urinary or fecal incontinence and pelvic organ prolapse. These physical complications can limit a woman's ability to care for her newborn and may affect her future sexual intimacy.

Dr. Cvetkov's dissertation is dedicated to intrapartum injuries of the perineum and pelvic floor – a topic that is supposedly well known but remains quite debated. Currently, there is no consensus in the literature on how exactly to prevent, diagnose, and treat these obstetric complications. Obstetricians should lead these processes, although interdisciplinary approaches are often necessary.

Ultrasound examination is a simple, inexpensive, and successful method for diagnosing this type of injury. Dr. Cvetkov is the first in Bulgaria to propose this

method for diagnosing anal sphincter injuries post-delivery using transvaginal ultrasound. The topic of the dissertation is current and debatable.

Review of the Literature

The literature review includes 215 sources, mainly in English, indicating that the candidate has thoroughly researched the related topics of early diagnosis, prevention, and prophylaxis of intrapartum injuries to the pelvic floor and perineum. It is noticeable that there are few citations from recent years (the dissertation was finished a few years ago), but in my opinion, this does not diminish the work's value.

Objective of the Study

The aim of this work is to establish the actual frequency and severity of intrapartum pelvic floor injuries, the risk factors for their occurrence, and the methods for their prevention and treatment.

Objectives of the Dissertation

The objectives are clearly and specifically formulated as five tasks:

- To determine the actual frequency of intrapartum injuries of the anal sphincter using imaging methods for early diagnosis (endoanal ultrasound examination).
- To formulate the problem of intrapartum injuries of the pelvic floor as a cause of the frequently observed fecal incontinence in women of older age.
- To establish the influence of the most common risk factors and their severity on the occurrence of occult intrapartum injuries of the anal sphincter.
- To identify changes in the duration of the second stage of labor as an independent risk factor for pelvic floor tearing in clinical practice, following the application of a medical device—an obstetric gel.
- To develop an algorithm for prevention, diagnosis, timely treatment, and follow-up of intrapartum injuries of the pelvic floor.

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Materials and Methods

The materials and methods are very precisely described and appropriate methods were used to support the trainee's thesis. The materials were collected from four different hospitals—UHAT "Dr. Georgi Stransky" in Pleven, Bulgaria; "Nadezhda" Women's Health Hospital in Sofia, Bulgaria; University Clinical Center, Delivery Deparment – Ljubljana, Slovenia; and Gynecology-Obstetrics Department, General Hospital – Trbovlje, Slovenia—personal collection by the candidate during 2009-2014.

Own Results and Discussion

A final analysis included 203 women divided into working groups, and a clinical management algorithm was developed based on current protocols for practice in obstetrics and gynecology.

Assessment of Conclusions and Contributions

Dr. Cvetkov formulated 11 conclusions, 3 scientifically-theoretic contributions with original character, and 3 practical contributions, the most significant of which are:

Conclusions:

- ✓ In the study, after performing endoanal ultrasound, the autor found a frequency of OASI (Obstetric Anal Sphincter Injuries) of 25.4%, i.e., in 16 of 63 patients. All these tears were classified as IIIA or less than 50% tear of the external anal sphincter's total thickness.
- ✓ No side effects were noted from the application of Dianatal® in the newborns or the mothers.
- ✓ Reducing the duration of the expulsive phase of labor by applying a medical obstetric gel can significantly reduce the frequency of such childbirth injuries, decrease fear and discomfort for women during delivery, and minimize late complications of childbirth trauma, such as anal and urinary incontinence, pelvic

organ prolapse, sexual dysfunction, and ultimately, deterioration in quality of life.

- ✓ A pronounced trend was observed toward a significant reduction in the duration of the second stage of labor following the application of the obstetric gel Dianatal®.

Scientific-Theoretical Contributions:

1. For the first time in Bulgaria, a clinical study utilized the recognized ICS and IUGA classification of intrapartum perineal injuries, based on the fundamental postulates of the integrated theory concerning the functional unity of the pelvic floor.

Scientific-Practical Contributions:

1) The first use in Bulgaria of transvaginal ultrasound examination for early diagnosis of intrapartum injuries of the pelvic floor.
2) Demonstrated positive impact of applying medical devices (obstetric gel) in preventing intrapartum injuries by significantly shortening the second stage of labor—an innovative opportunity to reduce their frequency and severity.
3) The developed practical algorithm for prevention, diagnosis, treatment, and follow-up of women with intrapartum injuries is of practical use for all specialists or practicing obstetricians, based on current research and clinical practice in light of evidence-based medicine.

Critical Remarks and Recommendations

The literature sources in the bibliography are few and somewhat outdated, but this does not diminish the value of Dr. Cvetkov's work. It is important to report that one of the publication regarding the usage of obstetrics gel was citated in 2023.

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Conclusion

The dissertation is well-structured, with credible conclusions and significant contributions to Bulgarian obstetrics. The results are original, practically applicable, and enrich existing knowledge and experience in Bulgaria. This work possesses all the qualities of a dissertation for the academic degree "Doctor."

All these reasons give me absolute confidence to support the awarding of the academic degree "Doctor" to Dr. Dimitar Cvetkov.

Date: August 30, 2025