

**"VICTOR BABEȘ" UNIVERSITY OF
MEDICINE AND PHARMACY TIMIȘOARA
DOCTORAL SCHOOL
MEDICINE**



HABILITATION THESIS

**MULTIDISCIPLINARITY AND INNOVATION
FOR A MODERN PEDIATRIC SURGERY
AND ORTHOPEDICS**

A B S T R A C T

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TABLE OF CONTENTS

ABBREVIATIONS	5
REZUMAT	7
ABSTRACT	11
1. SCIENTIFIC ACHIEVEMENTS	15
1.1. Scurt istoric al activității științifice	15
1.2. Principalele teme de cercetare științifică și studii dezvoltate	16
1.2.1. Etiologia și patogenia Pectus Excavatum la copil	16
1.2.2. Chirurgia Pediatrică Minim Invazivă	30
1.2.2.1. Metodele moderne de tratament al Pectus Excavatum	30
1.2.2.2. Chirurgia laparoscopică pediatrică	34
1.2.2.3. Chirurgia pediatrică asistată robotic	38
1.2.2.4. Metode moderne de tratament ale fracturilor la copil	45
1.2.3. Defectele congenitale ale peretelui abdominal.....	54
1.2.4. Domenii secundare de cercetare	59
1.3. Brevete de invenție	68
1.3.1. Sondă nazo-gastrică pentru tratamentul chirurgical al atreziei de esofag	68
1.3.2. Dispozitiv pentru corecția defectelor congenitale ale peretelui abdominal.....	73
1.4. Cărți și capitole în cărți	78
1.4.1. Cărți de specialitate	78
1.4.2. Capitole în tratate.....	80
1.5. Proiecte de cercetare	81
1.6. Alte contribuții și recunoașterea activității științifice	83
1.6.1. Recenzii pentru articole în reviste cotate ISI	83
1.6.2. Citări în reviste cotate ISI	84
1.6.3. Premii obținute	84
1.6.4. Lector invitat.....	85
1.6.5. Membru în colective editoriale și în comitete de organizare ale unor manifestări științifice, apartenența la structuri profesional-științifice	86
2. ACADEMIC ACHIEVEMENTS	89

3. PROFESSIONAL ACTIVITY	92
4. ACADEMIC AND SCIENTIFIC PERSPECTIVES.....	96
4.1. Cercetare științifică	96
4.1.1. Pectus Excavatum	97
4.1.2. Chirurgia pediatrică minim invazivă	97
4.1.3. Urologie Pediatrică.....	98
4.1.4. Brevete de invenție de la concept la aplicație	99
4.1.5. Continuarea colaborărilor și realizarea de colaborări noi	99
4.1.6. Implicarea tinerilor medici în activități de cercetare.....	99
4.2. Educație.....	100
4.3. Creșterea prestigiului Universității/ Departamentului/ Disciplinei	101
4.4. Dezvoltare personală	102
REFERENCES.....	103
LIST OF 10 REPRESENTATIVE SCIENTIFIC PAPERS PUBLICATIONS	117

ABSTRACT

The reason why I have entitled the present habilitation thesis "Multidisciplinarity and Innovation for a Modern Pediatric Surgery and Orthopedics" is because these two aspects have always been present during my medical and academic career in the field of Pediatric Surgery and Orthopedics. I believe that Innovation and multidisciplinarity are key aspects in the process of dynamizing and modernizing a medical and scientific field. The thesis presents the essence of my professional, scientific, and academic activity after obtaining the title of doctor in medical sciences in 2010.

The first chapter is dedicated to my scientific achievements so far. There I present the main research topics followed during my academic career: the etiopathogenesis of Pectus Excavatum in children, minimally invasive pediatric surgery and robotic assisted pediatric surgery, modern, minimally invasive pediatric orthopedics and traumatology, congenital defects of the abdominal wall and other research fields in which I was involved in collaboration with related disciplines. The main research topics were presented in the light of studies and publications and in the global context of significant and current scientific achievements in each subfield. In addressing each of these research topics, I faced enormous challenges as well as great satisfactions. In conducting the studies, I used different methods from clinical research to basic research methods, including elements of histology, medical genetics, immunohistochemistry, and experimental research, in other words a multidisciplinary approach. I should mention that I have showed an innovative spirit when developing new surgical techniques or improved existing ones. Also, in this chapter I talk about the patents made and which are closely related to the research topics presented earlier: nasogastric tube for the surgical treatment of esophageal atresia and device for the correction of congenital defects of the abdominal wall.

In this first chapter I also talk about my scientific achievements in terms of publications, books or book chapters, reviews for ISI journals and citations of my papers in ISI journals. Further in the chapter I present the scientific awards I

obtained during my career, membership in professional structures, member of committees for organizing scientific events, member of the editorial staff of some publications and the occasions when I participated as a guest lecturer at scientific events. Thus, I am the author or co-author of over 70 scientific papers in extenso, of which 24 in ISI Web of Science indexed journals; I am the author or co-author of 4 specialized books and 6 chapters in specialized medical treatises; When writing this thesis I have already done 25 reviews for scientific articles published in ISI journals and my publications have collected a number of 116 citations in ISI journals; I obtained 7 prizes for scientific papers and I was a guest lecturer at 4 scientific events; I am a member of the editorial and review committee of 3 journals, 2 of which are ISI, I have participated in the organization of 9 scientific events and national and international courses and I am a member of 6 professional associations in the country and abroad. Last but not least, I was part of the teams of 5 research projects, for one I was even the project manager.

The second chapter includes aspects of my academic development and achievements. I started my academic career in 2013 within the discipline of Pediatric Surgery and Orthopedics, Department XI Pediatrics of the "Victor Babeş" University of Medicine and Pharmacy from Timișoara. In 2016 I became Lecturer and since 2021 I am Associate Professor in this discipline. My teaching activity took place with the students of the Faculty of Medicine and General Nursing. I coordinated 18 students in preparing their dissertation thesis, I coordinated or participated in the elaboration of several papers presented by students and doctoral students at scientific congresses and conferences, and I participated in the organization of 8 postgraduate courses.

The third chapter summarizes my professional career so far with a focus on the main achievements. In 2011, I became a specialist in Pediatric Surgery and in 2015 I became a specialist in the second specialty, Pediatric Orthopedics. In 2016 I became a primary care physician in Pediatric Surgery. I carried out my medical activity in the Pediatric Surgery and Orthopedics Clinic of the "Louis Țurcanu" Emergency Clinical Hospital for Children in Timișoara. Throughout my medical career, I have tried to promote the highest standards of performance in the care of young patients. That is why I tried to continuously develop from a professional point of view, I participated in over 50 medical scientific conferences and in 27 postgraduate courses in the country and abroad. I have

obtained certificates of additional studies in several fields such as: general ultrasound, pediatric laparoscopic surgery, or robotic assisted surgery. Therefore, professionally speaking, I was a supporter of modern and innovative methods of treatment in Pediatric Surgery and Orthopedics. I embraced early in my career minimally invasive treatment methods such as laparoscopy, endourology, robotic surgery or minimal invasive treatment of long bone fractures in children. Also, in order to develop professionally and to increase my knowledge and skills to treat children with surgical-orthopedic pathology, I participated in several exchanges and training programs abroad. Last but not least, I was also involved in charitable actions that were meant to help the hospital and the clinic where I work.

In the last chapter, the fourth, I presented my vision for the further development of my academic career. At the beginning, I performed a SWAT analysis because I intended to set with a better precision the premises from which I start in this plan. I have planned to pursue several directions in my academic career at the same time: scientific research, education, increasing the prestige of the university as well as personal development. In the scientific research I intend to continue the research topics developed so far, such as: elucidation of the etiopathogenesis of Pectus Excavatum or minimally invasive pediatric surgery, as well as to develop projects and studies in new fields such as pediatric urology and endourology. I also set out to move on to putting previously patented concepts into practice and to patent new ones. An important part will also be the involvement and encouragement of young doctors, students, PhD students in scientific research projects.

In terms of education, my intention is to develop my pedagogical skills and to implement modern, interactive teaching methods. Postgraduate courses are also in the field of education, my intention is to continue to participate in the organization of courses that are already a tradition such as minimally invasive pediatric surgery and to develop new ones. Finally, the didactic materials, the courses, the practical work guidelines need periodic updating and for fields such as Pediatric Laparoscopic Surgery new materials are needed.

I will increase the prestige of the University of the XI Department of Pediatrics, of the Discipline of Pediatric Surgery and Orthopedics by actively representations at scientific conferences and congresses, in professional organizations, scientific organizations or in organizing committees of scientific

events. Also, the prestige and visibility of our university will increase with the publication of scientific articles or books.

The bibliography includes a number of 219 references and is structured according to the norms established by the "Victor Babeş" University of Medicine and Pharmacy in Timișoara.

The habilitation thesis ends with a presentation of the 10 representative scientific papers.

LIST OF 10 REPRESENTATIVE SCIENTIFIC PAPERS PUBLICATIONS

1. **David VL.** Current Concepts in the Etiology and Pathogenesis of Pectus Excavatum in Humans—A Systematic Review. *Journal of Clinical Medicine.* 2022; 11(5):1241, IF 2021: 4.242 <https://doi.org/10.3390/jcm11051241>
2. **David VL,** Stanciulescu MC, Horhat FG, Sharma A, Kundnani NR, Ciornei B, Stroescu RF, Popoiu MC, Boia ES. Costal cartilage overgrowth does not induce pectus-like deformation in the chest wall of a rat model. *Exp Ther Med.* 2022 Jan; 23: 146, IF 2021: 2.447 <https://doi.org/10.3892/etm.2021.11069>
3. Stănciulescu MC, Popoiu MC, Cîmpean AM, **David VL,** Heredea R, Cerbu S, Boia ES. Expression of $\beta 1$ adrenergic receptor in vascular anomalies in children. *J Int Med Res.* 2021 Sep;49(9):3000605211047713. IF 2021: 1.671 <https://doi.org/10.1177/03000605211047713>
4. **David VL,** Ciornei B, Horhat FG, Amaricai E, Horhat DI, Hoinoiu T, Boia ES. Rat Animal Model of Pectus Excavatum. *Life-Basel* 2020 10(6), 96, IF 2020: 3.817 <https://doi.org/10.3390/life10060096>
5. Adam O, **David VL,** Horhat FG, Boia ES. Cost-Effectiveness of Titanium Elastic Nail (TEN) in the Treatment of Forearm Fractures in Children. *Medicina (Kaunas).* 2020 Feb 15;56(2) IF 2020: 2.43 <https://doi.org/10.3390/medicina56020079>
6. Adam O, Horhat FG, Amaricai E, **David VL,** Derzsi Z, Boia ES. Upper Extremity Fractures in Children-Comparison between Worldwide, Romanian and Western Romanian Region Incidence. *Children (Basel).* 2020 Jul 29;7(8):E84. IF 2020: 2.863 <https://doi.org/10.3390/children7080084>
7. Boia ES, **David VL.** The Financial Burden of Setting up a Pediatric Robotic Surgery Program. *Medicina (Kaunas).* 2019 Nov 14;55(11):739. FI 2019: 1.205 <https://doi.org/10.3390/medicina55110739>

8. **David VL**, Ercisli MF, Rogobete AF, Boia ES, Horhat R, Nitu R, Diaconu MM, Pirtea L, Ciuca I, Horhat D, Horhat FG, Licker M, Popovici SE, Tanasescu S, Tataru C. Early Prediction of Sepsis Incidence in Critically Ill Patients Using Specific Genetic Polymorphisms. *Biochemical Genetics*. 2017 Jun;55(3):193-203. FI: 1.927 <https://doi.org/10.1007/s10528-016-9785-2>
9. **David VL**, Cerbu S, Haragus H, Popoiu MC, Stanciulescu CM, Cozma G, Burlac O, Boia ES. Costal Cartilages Do Not Overgrow in Patients with Pectus Excavatum. *Med Princ Pract*. 2016;25(6):533-538, FI 2016: 1.469 <https://doi.org/10.1159/000449133>
10. **David VL**, Izvernariu DA, Popoiu MC, Puiu M, Boia ES. Morphologic, morphometrical and histochemical proprieties of the costal cartilage in children with pectus excavatum. *Rom J Morphol Embryol*. 2011;52(2):625-9, IF 2011: 0.523 <https://rjme.ro/RJME/resources/files/520211625629.pdf>