

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



**INNOVATIVE APPROACHES IN CLINICAL
ANATOMY AND ADVANCED GYNECOLOGICAL
RESEARCH: FROM ANATOMICAL VARIANTS TO
REPRODUCTIVE HEALTH CHALLENGES**

ABSTRACT

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THESIS SUMMARY

I, Prof. Motoc, Andrei Gheorghe Marius, born and educated in Timișoara, have dedicated my career to advancing the fields of clinical anatomy and gynecological research. After completing my high school education at the Nikolaus Lenau High School with high honors, I was admitted into the Faculty of Medicine at Victor Babeș University, where I started my journey in medical education and research.

My professional journey began in 1987, advancing through various educational and administrative roles, leading to my current position at the university. My habilitation thesis reflects my extensive work and achievements in anatomy and gynecological research and education, particularly focusing on anatomical variants and their clinical applications in improving reproductive health outcomes.

Since commencing my medical journey in 1987 as a young medical student, I have navigated through various pivotal roles ranging from a medical resident to a revered professor and a strategic administrator within the university. My commitment to the medical profession is deeply rooted in a desire to enhance patient care through innovative research and education.

I started my Ph.D. studies in 1996, started as scientific advisor Prof. Dr. Virgiliu Niculescu, member of the Romanian Academy of Medical Sciences, President of the Society of Anatomists of Romania. On 21.06.2002 I publicly defended my PhD thesis entitled "Possibilities and perspectives in the treatment of female infertility. Anatomoclinical and experimental study in view of uterine transplantation" at the University of Medicine and Pharmacy "Victor Babeș" Timișoara under the direction of Prof. Univ. Dr. Ștefan I. Chiovschi, Head of the Obstetrics and Gynecology Clinic.

I was confirmed Doctor of Medicine according to the Diploma Series C No. 0004183, issued on the basis of the Order of the Ministry of Education and Research No. 4.198 of 29.07.2002,

The habilitation thesis, titled **"Innovative Approaches In Clinical Anatomy And Advanced Gynecological Research: From Anatomical Variants To Reproductive Health Challenges"** serves as the culmination of my scientific,

professional, and academic endeavors, with a particular focus on accomplishments achieved following the attainment of my Ph.D. in Medicine (2002 - present).

This thesis adheres to academic conventions and is structured into four distinct sections:

- i) The first section is dedicated to my scientific contributions and research work.
- ii) The second section highlights my achievements and contributions within the academic sphere.
- iii) The third section delves into my professional engagements and accomplishments.
- iv) The final section outlines a comprehensive plan for the development of my academic career.

Chapter 1 covers the main postdoctoral scientific research achievements and covers the primary areas of research, presenting original studies, articles published in international journals, indexed Clarivate Web of Science - ISI, and scientific papers presented at national and international congresses, in the current scientific context of Anatomy and Obstetrics-Gynecology. In this chapter, we also find materials of interest other than those. These are original and innovative works in the areas of secondary research of which we were the main author and important methods of mass dissemination, such as textbooks or course materials.

This chapter also provides an account of the progression of my scientific development, achievements, and the recognition I have garnered both nationally and internationally. Over the course of my professional, medical, scientific, and academic career, I have actively participated in numerous national and international congresses, contributing to poster sessions, delivering oral presentations, and serving as an invited speaker.

With respect to the significance and impact of my scientific findings, my selected research topics have traversed multidisciplinary pathways and encompassed various facets of anatomy. These topics involve intricate and multidisciplinary intersections, substantiated by the publication of books and articles that bear testament to the originality, relevance, incorporation of scientific concepts, high scientific rigor, synthesizing capacity, and comprehensive approach to subjects within the field.

As regards the scientific papers, I have published **129 in extenso articles**, as the main author or in collaboration with other authors, in Clarivate Web of Science indexed scientific journals and **80 abstract papers** published in volumes of international events, **72 articles in specialized journals** of international circulation recognized national journals, **35 papers published in abstracts** in volumes of national events.

The publications in the various international ISI journals have had a scientific impact and are recognized, accumulating a total of **1053 citations in the ISI Web of Science** system and a **Hirsch index of 16**. Furthermore, I have organized scientific events and **I hold 3 patents**: 1. Electronic device for measuring and displaying brain electric signals with digital filtration; 2. Electronic device for connecting medical equipment to a computer with overvoltage protection; 3. Electronic device for amplifying and multiplexing the electrical cardiac signals.

In addition, I have written and published 17 books as co-author, first author, or sole author.

I have a keen interest in exploring the practicality of anatomy and obstetrics-gynecology in both clinical practice and research. Consequently, the initial segment of this chapter spotlights my scientific accomplishments in two distinct research directions I have pursued recently: "General Anatomy and Clinical Implications" and "Research in Obstetrics and Gynecology".

The research is original, innovative, and valuable as it contributes to our understanding of the fields of anatomy and obstetrics-gynecology.

Building upon the knowledge gained while working on my doctorate degree, I pursued further study in the fields of anatomy and obstetrics-gynecology, specifically concentrating on clinical implications of anatomy research, and maternal-fetal health.

Firstly, exploring complex vascular structures and associated anatomical variations has been a continuous challenge for researchers, especially in the field of surgery, where every anatomical detail can influence the therapeutic decision and determine the success of an intervention. The first study presented, "*Rusu MC, Cergan R, Motoc AG, Folescu R, Pop E. **Anatomical considerations on the corona mortis**. Surg Radiol Anat. 2010 Jan;32(1):17-24*" presents a detailed analysis of this vascular structure and its implications in surgical practice. This study highlights the prevalence and anatomical variability of the corona mortis. With 80% of hemipelvises demonstrating this vascular network, the findings underscore the

importance of careful dissection and individualized surgical planning in the pelvic region. Awareness of these variations can enhance surgical safety and potentially improve patient outcomes by minimizing vascular injury risks. In a natural continuation of our research on the anatomy of the pelvic vessels, we have also analyzed the iliolumbar artery and the branches of the common iliac artery, presenting the results in the study "*Rusu MC, Cergan R, Dermengiu D, Curcă GC, Folescu R, **Motoc AG**, Jianu AM. **The iliolumbar artery-anatomic considerations and details on the common iliac artery trifurcation.** Clin Anat. 2010 Jan;23(1):93-100*". Such an arterial road map will identify the exact level of origin of the ILA and the DLB, the height of the arteries in relation to the vertebral column, their course and their topography as related to the coxal bone and iliac fossa. The identified origin of the ILA will allow an informed approach of the interventional radiologists, for avoiding endoleakage due to a highly originating ILA, not embolized. Extending the analysis of anatomical variations to other vascular structures, the study "*Dăescu E, Zăhoi DE, **Motoc A**, Alexa A, Baderca F, Enache A. **Morphological variability of the renal artery branching pattern: a brief review and an anatomical study.** Rom J Morphol Embryol. 2012;53(2):287-91*", aims to to evaluate the renal artery branching pattern, the number and origin of the segmental arteries, as well as to review data from similar studies. arterial segmental control through clamping is anatomically possible, but difficult because of the high individual morphological variability. A primary or even secondary prehilum branch of the renal artery need not always be a segmental artery (only 53%); it may be a common trunk or even a lobar artery. The rate of segmental artery accessibility can influence the laparoscopic surgery approach. In the same spirit of deepening our knowledge of vascular anatomy, the study entitled "*Sztika D, Zăhoi DE, **Motoc A**, Farca Ureche M, Dăescu E. **Anatomical variations of the hepatic portal vein associated with incomplete celiac trunk.** Rom J Morphol Embryol. 2011;52(2):695-8*" documents the anatomical variations of the hepatic portal vein associated with incomplete celiac trunk. In conclusion of this study, familiarity with the anatomical vascular variations is of clinical importance in abdominal surgery and oncological and imagistic procedures.

Following the exploration of the pelvic and abdominal vascular anatomy, I extended the research to the vascular structures of the neck and skull, which present their own challenges. The study "*Jianu AM, **Motoc A**, Mihai AL, Rusu MC. **An anatomical study of the thyroid arteries anastomoses.** Rom J Morphol Embryol.*

2009;50(1):97-101", concludes that, the clinical importance of the collateral circles in the neck recommends their protection during neck surgery, if the surgical technique allows this; the clinicians must be aware of their possible functional value and the surgeons must take into account these arterial morphologies while acting on the neck viscera. In parallel with this study, we reported a a unique case of agenesis of the left internal carotid artery associated with anomalies of the communicating arteries in the paper " Jianu DC, Bârsan C, Dan TF, Jianu SN, **Motoc AGM**, Crețu OM. **Left internal carotid artery agenesis associated with communicating arteries anomalies. A case report.** Rom J Morphol Embryol. 2018;59(2):601-605"

More, the study "Popescu MR, Butcovan D, Folescu R, **Motoc A**, Zamfir CL. **Thoracic aorta dissection - assessment of aortic adventitia involvement.** RJLM. 2013;21(3):207–14", was focused on the distribution of thoracic aorta vasa vasorum in normal state at different ages and in aortic dissection in aged people, in order to identify a possible medial ascent, triggering the vascular wall alteration. This study demonstrates that it is conceivable an age dependent evolutive pattern of aortic vasa vasorum, which becomes a dynamic structure, able to respond in a specific manner to different aggressions, operating in concert with other components of the aortic wall.

The chapter on anatomy continues with the presentation of research on microvascularization, neovascular structures, and specific anatomical structures.

Deepening the exploration of vascular networks in the gynecological sphere, the study "Rusu MC, **Motoc AG**, Pop F, Folescu R. **Sprouting angiogenesis in human midterm uterus and fallopian tube is guided by endothelial tip cells.** Anat Sci Int. 2013 Jan;88(1):25-30. doi: 10.1007/s12565-012-0154-x." provides a detailed insight into the mechanism of angiogenesis in the uterus and fallopian tubes. Furthermore, the study "Folescu R, **Motoc AG**, Zamfir CL, Ilie AC. **Anatomical and histological considerations of placenta vascular diseases with implications in forensic medicine.** Rom J Morphol Embryol. 2014;55(2 Suppl):579-83", explores the vascular pathology of placentas from 467 cases. This study sustains the existence of distinct placental aspects in aborted fetuses or in cases of intrauterine deaths, for various reasons considered forensic cases.

Moving on to the study of autonomic plexuses and ganglia in the functional support of the digestive and reproductive systems, the study "Sișu AM, Stana LG, Petrescu CI, **Motoc A.** **Macroscopic, mesoscopic and microscopic morphology**

of the gastric plexus--ontogeny of the celiac ganglion. *Rom J Morphol Embryol.* 2012;53(3):591-6." explores the structure of the gastric plexus and the development of the celiac ganglion, a control center for the activity of the abdominal organs. This examination of ganglion innervation continues with the study "Sişu AM, Petrescu CI, Cebzan CC, **Motoc A**, Bolintineanu S, Vaida AM, Niculescu MC, Rusu MC. **The adult coeliac ganglion: a morphologic study.** *Rom J Morphol Embryol.* 2008;49(4):491-4.", which provides a detailed analysis of the neuronal distribution and microvascularization of the adult coeliac ganglion. From the lymph nodes in the digestive system, the next study moves on to the autonomous structures in the reproductive system. The study "**Motoc A**, Rusu MC, Jianu AM. **The spermatic ganglion in humans: an anatomical update.** *Rom J Morphol Embryol.* 2010;51(4):719-23." describes the structure of the spermatic ganglion, a catecholaminergic network located along the testicular artery, which plays a vital role in regulating testicular blood flow.

Following on from microvascular anatomy, the focus turns to embryonic structures and how they influence early development. A fascinating first study in this section is "Rusu MC, Pop F, Leonardi R, **Motoc AG**, Jianu AM. **Morphologic features of the fetal mandibular condyle: layers, canals and microvascular pattern.** *Ann Anat.* 2011 Oct 20;193(5):436-46", which provides a detailed insight into the microvascular structures of the fetal mandibular condyle.

Continuing this topic, the study "Ilie CA, Rusu MC, Didilescu AC, **Motoc AG**, Mogoantă L. **Embryonic hematopoietic stem cells and interstitial Cajal cells in the hindgut of latestage human embryos: evidence and hypotheses.** *Ann Anat.* 2015 Jul; 200:24-9" analyzes the presence of hematopoietic stem cells and interstitial Cajal cells, both of which are essential for the development of the enteric nervous system. It appears that, in late-stage human embryos, the ICC-MY layer is established in hindgut. The hindgut colonization with CD45+ DCs suggests an AGM contribution and a role in establishing the hind gut vascular architecture. In this regard, research on human material is imperative to correlate the available data, which resulted mostly from experimental studies on non-human material.

Finally, exploration of microvascularization and neurovascular interactions extends to the immune structures of the thymus. Studies on the thymus complete this chapter by exploring Hassall corpuscles, essential immune structures. The study "Raica M, Cimpean AM, Encica S, **Motoc A**. **Lymphocyte-rich Hassall bodies in**

the normal human thymus. *Ann Anat.* 2005 Apr;187(2):175-7 " provide a detailed description of the morphologic and immunohistochemical variability of these corpuscles. Present observations cannot explain how lymphocytes were entrapped within Hassall bodies. Following this topic, the study "*Raica M, Encică S, Motoc A, Cîmpean AM, Scridon T, Bârsan M. Structural heterogeneity and immunohistochemical profile of Hassall corpuscles in normal human thymus.* *Ann Anat.* 2006 Jul;188(4):345-52", was conducted on 27 specimens of normal thymus, removed during surgery for cardiovascular malformations.

The last part, dedicated to anatomical studies, focused on anatomical considerations in the neurological and ENT context.

The first study, "*Sava A, Furnică C, Petreuş T, Chistol RO, Motoc AG. Trigeminal nerve: MRI anatomy and case presentation of trigeminal neuralgia due to arterial compression.* *Rom J Morphol Embryol.* 2012;53(4):1097-102", we presented a case of 50-year-old female patient is addressed to the neurology service for a right-side facial neuralgia. This research emphasizes the importance of precise anatomical knowledge for neurosurgeons and radiologists, who must carefully evaluate the spatial relationships between arteries and the trigeminal nerve to identify potential sources of compression and plan effective treatments.

Research on anatomical study in the neurological sphere continued with studies on the optic nerve and various pathologies. The study "*Jianu DC, Jianu SN, Petrica L, Motoc AG, Dan TF, Lăzureanu DC, Munteanu M. Clinical and color Doppler imaging features of one patient with occult giant cell arteritis presenting arteritic anterior ischemic optic neuropathy.* *Rom J Morphol Embryol.* 2016;57(2):579-83" aims to show the essential role of color Doppler imaging (CDI) of orbital vessels to quickly elucidate (less than thirty minutes) the arteritic mechanism of AION in our patient with equivocal ophthalmological features of A-AION. Following this topic, the study "*Stanca HT, Suvac E, Munteanu M, Jianu DC, Motoc AGM, Roşca GC, Boruga O. Giant cell arteritis with arteritic anterior ischemic optic neuropathy.* *Rom J Morphol Embryol.* 2017;58(1):281-285" aims to investigate the ophthalmologic and systemic features, the ultrasound findings of the orbital vessels and of the superficial temporal and the carotid arteries and the TAB data in a patient with left AION, which helped us to quickly differentiate newly diagnosed arteritic-AION from non-arteritic-AION. This is because A-AION requires immediate glucocorticoid treatment, in order to protect both eyes from going blind.

The next study, “Andrei F, **Motoc AG**, Didilescu AC, Rusu MC. **A 3D cone beam computed tomography study of the styloid process of the temporal bone.** *Folia Morphol (Warsz)*. 2013 Feb;72(1):29-35”, aims to investigate the length and three-dimensional orientation and to detail the morphological variations of the styloid process. The present study indicates that an increase of the sagittal angle is associated with an increase in SP length.

As for the second main research direction that we have addressed, research in obstetrics and gynecology, this has focused on several topics such as pregnancy in the COVID-19 era, the study of different pathologies of pregnancy such as preterm birth or fetal growth restriction, and the study of gynecologic pathology such as infertility and gynecologic cancers.

This sub-chapter that presents research on pregnancy and neonatal complications related to the COVID-19 pandemic covers several topics such as the vertical transmission of SARS-CoV-2, the risks of vaccination, and the reasons for its hesitancy, debates on nutrition, and mental health in pregnant women in the context of the pandemic.

The first study, “Citu IM, Citu C, Gorun F, Sas I, Tomescu L, Neamtu R, **Motoc A**, Gorun OM, Burlea B, Bratosin F, Malita D. **Immunogenicity Following Administration of BNT162b2 and Ad26.COVS COVID-19 Vaccines in the Pregnant Population during the Third Trimester.** *Viruses*. 2022 Feb 2;14(2):307” focused on studying its effects on normal pregnancy as well as analysing pregnant women's reasons for refusing vaccination. This study advocate for pregnant women to get vaccinated against COVID-19 and for the development of targeted campaigns to address the factors of hesitation. This research emphasizes the critical need for delivering the COVID-19 immunization to the whole community, including pregnant women who may have vaccine-related concerns. Another study on the effects of vaccination against COVID-19 in pregnant women was “Citu IM, Citu C, Gorun F, **Motoc A**, Gorun OM, Burlea B, Bratosin F, Tudorache E, Margan MM, Hosin S, Malita D. **Determinants of COVID-19 Vaccination Hesitancy among Romanian Pregnant Women.** *Vaccines (Basel)*. 2022 Feb 10;10(2):275”. This study determined that the risk of spontaneous abortion after mRNA COVID-19 immunization during the first trimester of pregnancy is similar to the risk in non-vaccinated pregnant women. More recently, I wanted to investigate issues related to nutrition in pregnancy in the context of the pandemic. The study “Citu IM, Citu C, Gorun F, Sas I, Bratosin F,

Motoc A, Burlea B, Rosca O, Malita D, Gorun OM. The Risk of Spontaneous Abortion Does Not Increase Following First Trimester mRNA COVID-19 Vaccination. J Clin Med. 2022 Mar 18;11(6):1698” determine the presence of iron deficiency anemia in pregnancies associated with SARS-CoV-2 infection.

Further, another study on the topic of nutrition in pregnancy in the context of the COVID-19 pandemic “**Citu IM, Citu C, Margan MM, Craina M, Neamtu R, Gorun OM, Burlea B, Bratosin F, Rosca O, Grigoras ML, Motoc A, Malita D, Neagoe O, Gorun F. Calcium, Magnesium, and Zinc Supplementation during Pregnancy: The Additive Value of Micronutrients on Maternal Immune Response after SARS-CoV-2 Infection. Nutrients. 2022 Mar 30;14(7):1445**”. The study follows data on the effect of magnesium and magnesium-containing nutritional supplements on the immune response to SARS-CoV-2 infection in pregnant women. It also tracked differences in pregnancy outcomes according to supplements taken during pregnancy. This study achieved its primary objective of investigating the impact of magnesium and magnesium-containing nutritional supplements on the immune response after SARS-CoV-2 infection in pregnant women and determined some important differences in pregnancy outcomes in the same patients depending on the supplements taken during pregnancy. Finally, the study, “**Citu C, Gorun F, Motoc A, Sas I, Burlea B, Citu IM, Biris M, Forga M, Neagoe O, Gorun OM. Prevalence and Risk Factors of Postpartum Depression in Romanian Women during Two Periods of COVID-19 Pandemic. J Clin Med. 2022 Mar 15;11(6):1628**”. addresses another aspect of great interest in how the pandemic affects pregnant women, namely their psychological well-being. The aim of this study was threefold: to determine the prevalence of postpartum de-pression, to compare the prevalence of postpartum depression at two different times during the COVID-19 pandemic, and to assess a possible association between the timing of childbirth in a given period of the pandemic and the risk of postpartum depression. The study concluded that , the Covid-19 pandemic represents an impact on women mental health in the postpartum period, further increasing the risk of developing postpartum depression.

In terms of pathology associated with pregnancy, throughout my academic career I have dealt with topics such as preterm birth and fetal growth restriction. With regard to preterm birth, the research I have conducted has mainly focused on finding predictors and risk factors for preterm birth, with the objective of designing measures to avoid and mitigate its negative consequences.

The study “Neamtu RI, Craina M, Dahma G, Popescu AV, Erimescu AG, Citu I, Dobrescu A, Horhat FG, Vulcanescu DD, Gorun F, Bernad ES, **Motoc A**, Citu IC. **Heavy metal ion concentration in the amniotic fluid of preterm and term pregnancies from two cities with different industrial output.** *Exp Ther Med.* 2022 Feb;23(2):111” looked at the amniotic fluid of pregnant women from two large cities in Romania with differing industrial output, and whether there were disparities in the amounts of heavy metal ions. I further turned my attention to studying predictive markers for preterm birth. The study “Hrubaru I, **Motoc A**, Moise ML, Miutescu B, Citu IM, Pingilati RA, Popescu DE, Dumitru C, Gorun F, Olaru F, Erdelean I, Forga M, Nicolae N, Citu C. **The Predictive Role of Maternal Biological Markers and Inflammatory Scores NLR, PLR, MLR, SII, and SIRI for the Risk of Preterm Delivery.** *J Clin Med.* 2022 Nov 26;11(23):6982” aims to determine the predictive value of the Neutrophil-Lymphocyte Ratio (NLR), derived Neutrophil-Lymphocyte Ratio (dNLR), Monocytes-to-Lymphocyte Ratio (MLR), Platelets-to-Lymphocyte Ratio (PLR), Systemic immune-inflammation index (SII), and systemic inflammatory response index (SIRI), for premature delivery. In conclusion of this study, the inflammatory scores NLR, dNLR, PLR, and MLR measured throughout the second and third trimesters of pregnancy exhibited a high predictive value for preterm delivery. Furthermore, the study entitled “Hrubaru I, **Motoc A**, Dumitru C, Bratosin F, Fericean RM, Alambaram S, Citu IM, Chicin GN, Erdelean I, Gorun F, Citu C, Popa ZL. **Assessing the Utility of Hemoglobin, HALP Score, FAR Ratio, and Coagulation Parameters as Predictors for Preterm Birth.** *Children (Basel).* 2023 Mar 8;10(3):527” aims to determine the prognostic value of haemoglobin, the association of haemoglobin, albumin, lymphocyte and platelet (HALP) score and coagulation parameters such as prothrombin time (PT), activated partial thromboplastin clotting time (aPTT), D-dimer and fibrinogen/albumin ratio (FAR) for the risk of preterm birth. This study found that during the third trimester of pregnancy, levels of hemoglobin, the HALP score (which includes hemoglobin, albumin, lymphocyte, and platelets), and certain coagulation parameters such as PT, aPTT, D-dimers, and FAR were all significant variables when calculating the risk of preterm birth.

Further, in the context of the premature birth research, I also studied placental pathology in this syndrome. The study “Camen IV, Istrate-Ofițeru AM, Novac LV, Manolea MM, Dijmărescu AL, Neamțu SD, Radu L, Boldeanu MV, Șerbănescu MS,

Stoica M, **Motoc AGM**, Novac MB, Bujorescu DL. **Analysis of the relationship between placental histopathological aspects of preterm and term birth.** Rom J Morphol Embryol. 2022 Apr-Jun;63(2):357-367” established a correlation between placental histopathological and immunohistochemical changes and preterm birth with fetal growth restriction.

Related to the fetal growth restriction topic, I participated in the elaboration of two studies. The study titled " *Bujorescu DL, Ratiu A, Citu C, Gorun F, Gorun OM, Crisan DC, Cozlac AR, Chiorean-Cojocaru I, Tunescu M, Popa ZL, Folescu R, **Motoc A. Appropriate Delivery Timing in Fetuses with Fetal Growth Restriction to Reduce Neonatal Complications: A Case-Control Study in Romania.** J Pers Med. 2023 Apr 8;13(4):645* " employed a case-control design and was carried out at the Obstetrics Clinic of the Municipal Emergency Hospital in Timisoara. study shows the benefit of delivering fetuses before the onset of absent/reversed DV-a wave, the risk of early neonatal complications being higher among infants with GA < 30 WG whose delivery was delayed after the onset of UA-AEDF/REDF. These results can be used to develop a new strategy for the management of early onset FGR.

The objective of the second study, entitled "*Bujorescu DL, Rațiu AC, **Motoc AGM**, Cîtu IC, Sas I, Gorun IF, Gorun OM, Folescu R, Gurguş D. **Placental pathology in early-onset fetal growth restriction: insights into fetal growth restriction mechanisms.** Rom J Morphol Embryol. 2023 Apr-Jun;64(2):215-224* " , was to scrutinize placental pathologies in pregnancies afflicted by early-onset FGR, emphasizing a comparative analysis between cohorts with and without preeclampsia (PE). This study provides important insights into the placental lesions observed in patients with early-onset FGR, specifically highlighting the association with maternal malperfusion.

The second main line of research concludes with the overview of studies carried out in the field of gynecological pathology. Gynecological research has been based on two important pillars, gynecologic cancers, and infertility. Regarding gynecologic cancers, I have participated in the elaboration of several studies on breast cancer. In the first study, "*Moise M, Buruian MM, Ilie C, Zamfir CL, Folescu R, **Motoc AG. Estrogen and progesterone receptor expression in the mammary gland tumors.** Rom J Morphol Embryol. 2013;54(4):961-8*", we have studied the estrogen receptor and the progesterone receptor expression in malignant tumors, trying to identify the corresponding phenotypes according to the presence of these

tumors. Combining the result for ER/PR led to the definition of more tumoral phenotypes with different response rate at hormonal therapy, especially in advanced mammary neoplasm or metastasis. The second study, “Ghiulai R, Avram S, Stoian D, Pavel IZ, Coricovac D, Oprean C, Vlase L, Farcas C, Mioc M, Minda D, Motoc A, Szuhaneck C, Danciu C, Soica C, Sima L. Lemon Balm Extracts Prevent Breast Cancer Progression In Vitro and In Ovo on Chorioallantoic Membrane Assay. Evid Based Complement Alternat Med. 2020 Apr 14;2020: 6489159”, aims to repurpose the traditional use of lemon balm. Finally, the study “Sava A, Costea CF, Vatavu R, Grigore M, Turliuc MD, Dumitrescu GF, Eva L, **Motoc AGM**, Stan CI, Gavril LC, Scripcariu SI. **Brain metastases originating in breast cancer: clinical-pathological analysis and immunohistochemical profile.** Rom J Morphol Embryol. 2021 Apr-Jun;62(2):435-444”, aims to analyze the clinical-pathological features and the immunoprofile of BMs originating in BC to identify the risk factors for the occurrence of these neoplasias.

Concerning the other topic that I tackled in the course of my research on gynecology, namely infertility, I participated as co-author in the study “Citu C, Gorun F, **Motoc A**, Sas I, Gorun OM, Burlea B, Serban DM, Neamtu R, Citu IM. **Hysteroscopy as a Primary Tool in Exploration and Treatment of Infertility: Single Center Experience in Western Romania.** Diagnostics (Basel). 2021 Oct 16;11(10):1917”. The aim of this study was to evaluate hysteroscopic findings among women who were attending our second-degree medical care unit with unexplained infertility.

Chapter 1 also presents some of the many studies I have participated in as part of my secondary research activity.

Chapter 1 further provides an overview of all the postdoctoral scientific endeavors I have undertaken, spanning a wide spectrum of medical radiology and imaging. My postdoctoral research efforts have encompassed various themes beyond the primary focus branching out into additional areas. These secondary research interests have expanded the scope of investigation to encompass diverse facets of infectious diseases, as well as studies related to oncology field, and rare diseases.

Chapter 2 provides insights into the academic advancements and achievements that have characterized my career. The quality of teaching/professional activities is related to the following milestones:

- Teaching assistant at the Department I Anatomy of the U.M.F. Timișoara since 15.02.1991;
- University assistant at the Anatomy Department of the "Vasile Goldiș" University of Arad, 1991 - 1994;
- Since 01.10.1998, promoted, by competition, Lecturer
- Since 01.10.2003 promoted, by competition, associate professor, at the Discipline I Anatomy and Embryology.
- Since 01.10.2007 promoted, by competition, university professor, post on which I am currently working presently.

Throughout my academic tenure, I have actively participated in the adaptation and modernization of teaching activities, aligning them with contemporary European and international standards and models. I have contributed to the development of teaching materials and the creation of new courses. Furthermore, I have assumed the role of coordinator for student, resident doctor, and doctoral students. Additionally, I have been involved in committees responsible for specialist examinations, primary examinations, and licensing examinations, underscoring my commitment to academic excellence and mentorship.

Chapter 3 delves into my post-doctoral professional development and noteworthy achievements. I have completed all stages of medical training on a competitive basis (secondary, specialist, then primary obstetrics-gynecology). My interest in knowledge in the field of obstetrics and gynecology is also proven by my participation in numerous courses and scientific events. My work as a doctor, which I have carried out and practice with great passion and dedication, has been and continues to be well appreciated by colleagues, students and patients.

Chapter 4 elaborates my plans for the evolution and development of my teaching and research career. Teaching is a noble profession, which can only be achieved with dedication and passion. Maintaining, improving, and developing the quality of a teacher can only be achieved through personal development that is born from a burning motivation and a strong inner desire for continuous improvement. Therefore, I must continue research in the field of obstetrics-gynecology and anatomy along with the development of current and future clinical and scientific practices.

The integration of graduates into the medical labour market, by making use of the skills acquired during their studies, is a great achievement of university activities. It is therefore important to adapt the educational offer to the quality and performance requirements of modern medicine. Personally, this means high-level professional training. It is imperative to continuously develop the method of training students in the field of obstetrics and gynecology, towards teaching and learning of specialist concepts in accordance with European and international standards.

Through the future coordination of doctoral theses, I believe that I will be able to stimulate the work of new doctoral students, which will lead to the dissemination of the results of doctoral research in the scientific environment, both nationally and internationally. Last but not least, this opportunity will also help increase the visibility of the University. Interdisciplinary collaboration, multidisciplinary and innovative evidence-based research are at the heart of my desire to be able to guide and help future PhD students.

Bibliographical references, used to describe the research activities described in the previous sections, can be found at the end of this paper.