

**“CAROL DAVILA” UNIVERSITY OF MEDICINE AND  
PHARMACY BUCHAREST  
DOCTORAL SCHOOL  
MEDICINE**



**HABILITATION THESIS**

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**RESEARCH AND INNOVATION STARTING  
FROM TISSUE TRANSPLANTATION TO NEW  
MEDICAL TECHNIQUES AND PRODUCTS IN  
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# RESEARCH AND INNOVATION STARTING FROM TISSUE TRANSPLANTATION TO NEW MEDICAL TECHNIQUES AND PRODUCTS IN THE PLASTIC SURGERY FIELD

## HABILITATION THESIS ABSTRACT

I have started my Residency Training Program in Plastic and Reconstructive Surgery in 1995, at Plastic and Reconstructive Surgery Hospital, under the supervision of Professor Florin Isac. From the very beginning I was into reconstructive microsurgery, thinking about the possibility of reconstructing important tissue loss using microsurgical methods, especially in the upper limb, but also in the other areas of the human body. During that time, the Plastic and Reconstructive Surgery Hospital was the main training center of all plastic surgeons in the country. I had the opportunity to work with Assoc. Prof. Nicolae Antohi, a true master in microsurgery from whom I have learned many important techniques, which turned out to be very useful in my career. Right before becoming a specialist doctor, at the end of 1999, I attended a course in microsurgery training in Timisoara, which was organized by Dr. Mihai Ionac. This course made me better understand the true potential of microsurgery, and realize that if I master this field I can achieve unlimited reconstructive options.

In 2001, I have started my doctoral research at the “Victor Babes” University of Medicine and Pharmacy in Timisoara, under the guidance of Professor Dr. Petru Matusz, entitled “Morphological considerations of anatomic structures vascularization in hand and forearm from a surgical point of view”. I have started studying vascular anatomy of the hand and forearm, doing surgical dissection in cadavers, injecting arterial and venous branches, emphasizing vascular pedicles which stand to perform axial flaps or free tissue transfers from this area. However, because I was truly fond of the practicing complex hand and forearm reconstructions, I requested to continue my doctoral research to “Carol Davila” University of Medicine and Pharmacy, in the Plastic Surgery department under the guidance of professor Dan Mircea Enescu.

The paper aims to present in the beginning literature data regarding the known facts in the field, following by the exposition of the therapeutic approach in general in similar cases. Afterwards, the special part of the thesis exposes the shared experience, but also the individual study regarding this highly interesting subject in the plastic surgery field. Analyzing correctly the study group, setting a preoperative, intra and postoperative protocol led to comparative results in cases and statistically significant conclusions. Cases study, selection methodology, statistics evaluation and study implied factors analysis, together with personal cases analysis are detailed and transformed into a unitary therapeutic approach. Comparative analysis of the cases concluded some general therapeutic approaches, but also some specific ones. An evaluation of the cases was made in order to take into account different parameters of the wound. Depending on these parameters, the surgeon made a surgical decision, which sometimes can be tough to make considering the risks and consequences. The conclusions of my doctoral research and the silver-linings of this study are apposite, they bring new information, observations and original approaches in the surgical, medical field of the present medical condition.

I had made my doctoral research public in 2007, when I got the PhD title at the end of the same year.

Meanwhile, I made professional progresses, by having over 100 free tissue transfers and dozens of upper limb segmental replantation and by having the genuine will to get better and better each time I got the chance in the microsurgery field, my main focus being upper limb reconstruction.

In 2010 I had the opportunity to sign up for a postdoctoral project, entitled „Postdoctoral research in the reconstruction surgery for transplants (POSTDOC-TRANSPLANT)”, which was financed by the European Union and had as directing manager Professor Ioan Lascar. The postdoctoral research title was „Combining tissue transplantation – allografts – (bone, cartilage, skin etc) with locoregional axial flaps or free tissue transfers in hand and forearm reconstructive surgery”. The peak of this research project was publishing in the 1st number from February 2012 of „Chirurgia” magazine of the research: „Free tissue transfer in hand surgery – essential in hand transplantation”,

authored by S.Marinescu, I.P.Florescu, C.Giuglea, V.T.Grigorean, A.M.Boiangiu, I.Lascar. The paper called „The importance of free tissue transfers and hand and forearm replantation in developing a hand transplant centre” was presented at 17th IPRAS Congress in Santiago de Chile, between 24th February and 1st March 2013. The paper mentions the research activity during my postdoctoral time regarding allografts use in hand reconstructive surgery, likewise my efforts of making a future hand transplantation center.

I have published a number of 79 scientific articles, out of which 24 were published in Thompson Reuters indexed journals, another 26 in interantional data base journals and the rest of 29 in non-indexed papers. I hereby mention publishing some articles in prestigious international journals, like „New England Journal of Medicine”, „Clinical Infectious Diseases” or „Burns”. These articles were the result of scientific research along with personalities of the medical field from Europe and USA. Also, i have published a monography and 3 book chapers in „Tratat de chirurgie” under the editorial consent of Professor Dr. Ioan Lascar, Ed. Academiei Romane, Bucharest, 2008, chapter related to my doctoral research: Cap. 12 :”Open hand and forearm traumas” IP Florescu, I. Lascar, S. Marinescu) , Cap. 13: „Ostheo-articular lesions of the hand” (IP Florescu, I. Lascar, S. Marinescu) si Cap. 15: „ Covering hand and forearm soft tissue defects” (IP Florescu, S. Marinescu). I had 193 oral presentations in international and national congresses and confereces.

I was involved in numerous research projects, being the main investigator in 10 multicentric international studies and subinvestigator in other 7. I also attended national grants as managing leader, project responsible or member of the research team in 3 cases. I was a researcher in a postdoctoral project which was financed by the European Union.

My academic activity started in 2000, when I started as specialist doctor in plastic surgery guiding plastic surgery residents in the Department of „Bagdasar Arseni” Clinical Emergency Hospital. Once the first students came for rotations, in 2007, I teached both oral classes and practical ones to the students. In 2009 I became Lecturer in the same department, bringing conderent improvements from that moment on. From 2019 I am

Assoc. Professor and Chef of the Plastic Surgery Department of „Bagdasar Arseni” Hospital.

My professional career started with my residency program, between 1995 and 1999 in the Plastic and Reconstructive Surgery Hospital. Since 2000, I began my specialist career at „Bagdasar-Arseni” Clinical Emergency Hospital. In 2012 I was named member of the Ethics Committee and coordinator of the Research Department of „Bagdasar-Arseni” Clinical Emergency Hospital. Since 2013 I am coordinating the Subprogram of Human Cells, Tissue and Organ Transplant of „Bagdasar-Arseni” Clinical Emergency Hospital, and beginning 2014 until now I am coordinating the Breast Reconstruction using Silicone Implants Subprogram in „Bagdasar-Arseni” Clinical Emergency Hospital, which is part of the National Oncology Program. Since 2018, I am coordinating the „ Priority Actions in Treating Burned Patients” (AP-ARSURI).

I was at a time, vice-president and General Secretary of Romanian Plastic Surgeons Association and vice-president of Romanian Aesthetic Society. I am an active member of the homologous international societies . In 2018 I represented Romania in the 2nd European consensus of enzymatic debridement for burns treatment, also publishing a scientific article in „Burns” journal.

I attended numerous international courses and I also had the opportunity to visit some important hospitals in Europe, like those in Berlin and Brussels, trying to combine in my professional activity some learnings from the abroad medical centers.

In Romania, progresses were made both in the educational system and in the medical one. However, we never were really in line with Western countries. Even though there are some technological laps, I think that, with dedication and by valuing the existing human resource, we can successfully compete with our foreign colleagues in training professionally, medically and student and resident teaching.

One of my goals is to bring a new approach in teaching residents in plastic surgery. One of the main gaps in resident training nowadays is that during the residency period, the young surgeons can only see just a part of (sometimes under 50%) the plastic and reconstructive surgery conditions. Some specialty fields are extremely important, like reconstructive microsurgery, burn treatment and aesthetic surgery, and these cannot always be approached in all training centers. The goal is to collaborate with other plastic surgery department chiefs to create a new strategy to fully integrate the necessary tools so that by the end of the training program, the plastic surgery resident could mark on his checklist all themes from his training curricula. I also want to create professional exchanges with foreign plastic surgery centers so that residents can achieve more knowledge and extend their professional abilities.

My opinion is that an effort needs to be made in order to make the future plastic surgery specialists fond of reconstructive microsurgery, which requires difficult techniques but amazing results. I remember my first steps into this field, more than 20 years ago, when technology was not that advanced and the conditions were much more difficult, but beyond all that, I had the chance to meet special people, outstanding professionals, and remarkable teachers.

To continue my doctoral and postdoctoral research, I am willing to develop in the clinic that I am managing, a center focused on microsurgical transplants, where we can make partnerships with other organ transplantation centers in the country. Worldwide, there are plastic surgery centers where they make surgical transfers of fascio-cutaneous flaps from one donor body to another recipient human body. This flap works as sentinel flap, and it can be easier to survey the immunological changes, by making biopsies of the flap and gathering precious information about the good integrity of the transplant. I have in my mind a future collaboration with the transplant center from Fundeni Clinical Hospital, and in the future, why not, I am thinking about to develop a face and hand transplant center in „Bagdasar-Arseni” Hospital. The aim of this center will be focused on supermicrosurgery interventions, like lymphatic transfers for lymphedema treatment. My department has

halready had some successfull interventions with promising results regarding limphedema treatment.

Another goal is to promote and develop the national breast reconstruction program, in order to increase the number of female patients who can benefit free of breast reconstruction, and also to implement an improved protocol which provides better and predictable results.

Nonetheless, extensive burn treatment is one of my main challenges. The department that I am running is an Excellence Burn Center in Romania, because its protocol uses enzymatic debridment in burn treatment. I also went to an European Consensus regarding enzymatic debridment protocols, and my work work was published in „Burns” journal. I initiated and build up a national consensul regarding the initial debridement, where all importnat burn centers from Romania brought their contribution, the result of this gathering being summarized and published in „Farmacia” journal. Treatment of extensive burns cand be made in „Bagdasar Arseni” Emergency Hospital if a new proper burn unit or center is build, as seen in Western countries.