

**“CAROL DAVILA” UNIVERSITY OF MEDICINE AND
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DOCTORAL SCHOOL
DENTAL MEDICINE**



**NEW CONCEPTS, THEORIES AND THERAPEUTIC
APPROACHES IN SOME GLAUCOMAS WITH UNCONTROLLED
PROGRESSION**

-SUMMARY-

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The habilitation thesis entitled “NEW CONCEPTS, THEORIES AND THERAPEUTIC APPROACHES IN SOME GLAUCOMAS WITH UNCONTROLLED PROGRESSION” is structured in five main parts and presents the authors scientific, academic and professional career along with a plan for future development of the research field and academic career.

The first chapter of the habilitation thesis includes my personal motivation and revelations encountered in clinical cases, research and didactic activity so far.

Ophthalmology today is no longer just a field of medicine; it has become a vast territory, where leading fields of biology, laser physics or fluid mechanics, the pharmaceutical industry or complex devices, people in white and the hopes of the patients, blindness and darkness participate and interact.

Beyond the ultra-performing and sophisticated ways of today's technologies, the tools of the finest accuracy remain human sensitivity, curiosity and empathy.

To discover means to seek first. Look for what is "covered." We see the world with our eyes open, we see where we look, we look where we want to see, and to see we see only what we are prepared to understand. We see a lot, but we understand individually. Each step can bring something new, insofar as we can renew ourselves.

Only a new mind can be prepared to capture new realities. As an ophthalmologist, I understood that blindness is a concrete and dramatic phenomenon. As a human being, I understood that blindness can also have a symbolic value.

Ophthalmology deals with physical blindness.

Symbolic blindness takes on subtle, imperceptible and alienating forms. This can often manifest itself in the form of looking away, with the eyes closed, or out of sight; symbolic blindness makes us blind to many life situations. We learn progressively and sometimes we need certain suggestions to know where to look or when to open our eyes wide (even in research).

I think a teacher who does not do everything in his power to be overtaken by those he teaches, has lost his mission.

The motivation of this ability is to give me a chance of being overtaken.

The second chapter of the habilitation thesis included my research activity.

Glaucoma represents a group of diseases that have as a common element, the death of retinal ganglion cells. The complexity of the disease, the huge impact on patients life (glaucoma represents the first cause of irreversible blindness in the world) and treatment costs made me deepen the knowledge in glaucoma and made this one of my principal **research fields**.

My concerns for glaucoma have allowed me to propose new notions, clinical entities and theories in this field.

Many factors can influence the disease, each with its importance in different types of glaucoma. But, regardless, the only factor that we can actually influence is the intraocular pressure (IOP). We cannot consider the IOP value just as a number; we need to take into account all factors that influence the context of the disease in order to preserve our patients visual acuity because the same value of IOP can represent something different in each eye due to the peculiarities of these patients.. The author proposes the new term **etiological area of glaucoma**, a term that takes into account the whole context of the disease not only the IOP, individualizing each eye separately. The concept of etiological area allows the avoidance of errors in glaucoma management.

The eye with glaucoma may have a normal blood pressure different from the normal values in the statistics. The eye with glaucoma is not a normal eye. The normal value of eye pressure in this eye, is defined as the TIO value at which the progression of retinal ganglion cell loss would be as close as possible to the rate considered normal for a certain age and race.

The normal value of TIO is found in the patient's eyes and not in the statistical data, it is specific to each eye.

A particular type of glaucoma caught my attention: angle closure glaucoma with a lens involvement in young individuals without cataract. This patients present in an advanced stage, when all we can do is keep the small amount of vision they have. The clear lens and the lack of visual impairment due to cataract represent case peculiarity. I proposed for this type of glaucoma the term **occult phacomorphic glaucoma**.

The role of the lens is hidden in its own transparency: the lens determines the glaucoma, but it has no visual symptoms. My research proved the role of the lens and the

importance of lens extraction in these patients, as glaucoma treatment; *the capture of the most appropriate moment in which the extraction of the transparent lens would have maximum efficiency, not before the recovery of iridectomy and well-tolerated topical treatment but also after the appearance of severe trabecular lesions, can give cataract surgery maximum antiglaucoma valence.*

Also, personal observations regarding the IOP made me remark an interesting distribution of these values: low IOP values (11-12 mmHg) in hyperopia patients and high IOP values (18-19 mmHg) in myopic patients. We know that primary angle closure glaucoma is more frequent in hyperopic patients and primary open angle glaucoma in myopic patients, but the mechanism is different. This distribution may suggest a connection between the IOP value and these refractive errors. In this situation, I suggest ***the mirror theory in primary hypertensive glaucomas*** due to the fact that POAG and PACG could be the expression of the extreme trabecular function: decreased in POAG and excessive in PACG. This theory unifies primary hypertensive glaucomas and opens up new research opportunities and new therapeutic suggestions:

Relationships of ametropia with ocular tension in childhood

The possibility of excessive trabecular function in the small eyes suggests that in the biochemical, microcellular humoral reality of the hyperopic eye trabecula, the ideal and lost value of the trabecular function of the eyes with Primary Open Angle Glaucoma could be found.

In the primitive angle closures or narrow angles, in the narrow chamber angle of these eyes is the best trabecula, which we can waste by letting the angle close. Hence, the practical attitude is to prevent its deterioration, by peripheral iridotomy or lens extraction, as early as possible.

The third chapter of the habilitation thesis included my academic career that started in 1994. From 1994 to 2005 I was an Assistant Professor in Ophthalmology department, “Carol Davila” University of Medicine and Pharmacy of Bucharest Faculty of General Medicine (decision no. 8424/29.09.1994).

Then, from 2005 to 2009 I was a Lecturer in Ophthalmology department, “Carol Davila” University of Medicine and Pharmacy of Bucharest Faculty of Dental Medicine

(decision no. 11138/03.10.2005) and from 2009 to present I am an Associate Professor in Ophthalmology department, “Carol Davila” University of Medicine and Pharmacy of Bucharest Faculty of Dental Medicine (decision no. 12704/01.10.2009).

During this time I worked with students initially in the laboratories and then courses in Ophthalmology. I prepared materials, photos, videos and presentations. I also participated in the creation process of student books and test books (author of 2 monographs and 24 chapters in textbooks and books on ophthalmology).

I also worked with resident being responsible for their both clinical and surgical training in Ophthalmology. I also participated in numerous exam commissions in University Center of Bucharest or in other University Centers in Romania. I also coordinated papers for students that choose Ophthalmology as a study field for their Dissertation Thesis. From 2009 I was the coordinator of the entire didactic activity of the Ophthalmology Department in Dental Medicine of “Carol Davila” University of Medicine and Pharmacy of Bucharest.

The fourth chapter of the habilitation thesis included my professional activity. It started in 1990 when I became an Ophthalmologist Secondary Doctor (decision no. 1466/1990) and I started my training in Ophthalmology in Clinical Ophthalmology Emergency Hospital of Bucharest working near amazing professionals such as Prof Mircea Olteanu or Prof. Mihai Pop. During this period, I started my clinical and surgical career. In 1994 I was confirmed as a Specialist Physician in Ophthalmology (decision no.240/1994) and in 1998 I was confirmed as a Primary Physician in Ophthalmology (decision no. 694/1998). During this time, I continued my professional training taking some in Europe and in USA. In 2007 I was rewarded with a European Society of Ophthalmology Scholarship in Bristol, United Kingdom with Prof. David Easty, specialist in corneal surgery.

In 2008 I attended a cataract surgery training camp in Reutlingen (Germany). In 2009 I attended a glaucoma surgery training camp in Largo/Florida (SUA). During this period, I performed over 18.000 cataract surgeries and many glaucoma surgeries. I also performed many surgeries in patients with traumatic emergencies in my on emergencies service days in the Clinical Ophthalmology Emergency Hospital of Bucharest.

Since 2012 I have been elected vice president of the Romanian Glaucoma Society, in which capacity I was co-organizer of each Annual National Glaucoma Congress.

The last chapter of the habilitation thesis includes my vision of the research activity and its clinical application on our professional activity.

My future concerns in the field of glaucoma are moving in the following directions;

Study of borderline situations in glaucoma; initial diagnosis and terminal phase of the disease. These situations can have dramatic repercussions on the patient's destiny and today we do not have clear landmarks in these situations. In the final phase of the disease, when the structural and functional parameters are apparently stationary, we will have to look for new landmarks to detect the progression of the disease. The study of the macular region (the last redoubt opposite glaucoma) could provide cardinal landmarks in this phase of the disease.

The foundation of the mirror theory of primitive hypertensive glaucoma – (a theory that unites, does not separate), can open new perspectives for studying the pathogenesis of primitive glaucoma, their relationship to ametropia and the importance of TIO values in the normal statistical range.

The adoption of the notion of occult phacomorphic glaucoma draws attention to a misleading clinical situation that can be overcome by going through a certain order of therapeutic modalities.

This chapter is followed by bibliography.