



**CAROL DAVILA
UNIVERSITY OF MEDICINE AND PHARMACY
DOCTORAL SCHOOL
DENTAL MEDICINE**

**RESEARCH DIRECTIONS FOR INCREASING THE
PREDICTABILITY OF DENTAL IMPLANT
TREATMENT**

- Habilitation thesis abstract -

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The habilitation thesis „Research directions for increasing the predictability of dental implant treatment” is structured in four main parts, and it presents the candidate’s main results in his professional, academic, and scientific career since obtaining his PhD degree, along with his plans for the further advancement and development of the academic career. The candidate has been confirmed Doctor in medical sciences by the Order no. 4542 of 28.07.2010, after the public defense of the PhD thesis entitled “Clinical and morphological considerations on the bony support in oral implantology”.

The habilitation thesis respects all the standards of the current Guidelines for Habilitation of the Carol Davila University of Medicine and Pharmacy. The thesis starts by describing the scientific activity of the candidate, highlighting the main research domains that the candidate has approached, along with his areas of clinical and scientific expertise, as well as the results of the scientific research that the candidate has been directly involved in. This first section of the thesis presents the results of the candidate’s own work, specifically focusing on some of the scientific articles indexed in the Web of Science database that he has authored, and describing his own studies that made the most impact on the field of dental medicine, quantified by their citations in other field-specific publications.

The second section of the habilitation thesis describes the academic activity of the candidate. This section starts by briefly outlining the academic positions that the candidate has occupied in the past, and then going on to describe the educational materials developed as part of his work in the Department of implant-prosthetic therapy, the graduation theses that he coordinated, the admission and graduation exams in which he took part, and other administrative activities. All these elements highlight the candidate’s capacity to coordinate projects and research teams.

The third section briefly presents the candidate’s professional activity, describing the different timelines of the professional recognition received throughout his career. On the one hand, the candidate has participated in multiple training courses, obtaining a set of certifications and qualifications highly relevant to his current clinical and scientific career, while on the other hand, the candidate had also been involved in developing high-level educational programs, thus demonstrating his capacity to share the information and experience accumulated in the field of oral implantology and implant supported restorations, in order to train students and young professionals alike.

The fourth section of the habilitation thesis describes in detail the candidate’s plans for the further advancement and development of his academic career. This section is divided into

three main parts: clinical training of dental medicine students and PhD candidates, scientific training of dental medicine students and PhD candidates, and proposed directions of research towards integrating digital solutions in oral implantology.

Each stage of the implant-prosthetic treatment that can benefit from digital solutions is identified and described in details, as these stages can represent potential directions for research. Starting with the diagnostic step, this part describes the solutions offered by the cone beam computed tomography and the available software for visualizing the DICOM files.

The treatment planning sequence is described next; here, by standardizing intraoral and extraoral digital photography protocols the clinical results can become not only more predictable, but also more reproducible. Another technology described here is facial scanning, a more recent technology that still requires many clinical studies in order to be fully implemented in other fields of dentistry. Intraoral scanning techniques are discussed next, along with their advantages and limitations, and highlighting the manner whereby these limitations can be overcome through implementing more specific scientific clinically-driven studies.

Another potential research track is represented by the scanning of dental implant position using extraoral scanners – the technique called photogrammetry. This digital solution uses special scan bodies, and combined with the intraoral scanning of peri-implant soft tissues, it has the potential to become the next gold standard in implant prosthetic therapy.

Last but not least, computer designed surgical guides, through the tremendous advantages they offer to practitioners and through their rapid development in the recent years, can be considered as a stand-alone research field, along with the interconnected areas of complex technologies and associated biomaterials. This can also represent common ground for research with other scientific fields, such as bio-engineering and bio-technologies, with the potential to form research consortiums in which future PhD students and candidates can actively participate.

The end of the thesis presents an extensive list of bibliographic references that had been cited throughout the thesis, including articles published by the candidate himself.