

UNIVERSITY OF MEDICINE AND PHARMACY

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Doctoral school

Field: dentistry



**Advanced Dental Prosthetics: Function, Aesthetics, and Emerging
Technologies in Modern Oral Rehabilitation**

Habilitation Thesis Abstract

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Habilitation Thesis Abstract

The habilitation thesis entitled "*Advanced Dental Prosthetics: Function, Aesthetics, and Emerging Technologies in Modern Oral Rehabilitation*" represents the result of a complex professional and scientific journey spanning over thirty years, during which clinical experience has been intertwined with research and teaching activity. The central theme of the thesis reflects a constant concern for integrating function, aesthetics, and patient comfort into oral rehabilitation, through the use of modern technologies and interdisciplinary concepts that transcend the boundaries of traditional prosthodontics.

Today, dental prosthetics is undergoing radical transformations, driven by the advance of digitalization, the emergence of high-performance biomaterials, and the development of personalized clinical approaches. My research and clinical practice have consistently aimed to address these challenges, validate new solutions, and contribute to establishing protocols applicable in daily practice. Prosthetic implantology has been one of the main areas of interest. An important direction of research has focused on developing and validating hybrid techniques that combine digital and traditional methods. These approaches have demonstrated that integrating intraoral and extraoral scanning, alongside CAD processing, can provide results comparable or even superior to conventional impressions, especially in complex clinical cases. Through these contributions, I highlighted the role of hybrid techniques as immediately applicable solutions in modern prosthodontics, recognized and validated through articles published in professional journals.

In parallel, I paid particular attention to the development of digital workflows. The integration of CAD/CAM technologies, optical impressions, and 3D printing has fundamentally changed working methods, significantly reducing treatment time and increasing accuracy. My activity included the clinical validation of digital protocols and the publication of dedicated articles documenting their applicability in prosthetic practice. Research has also focused on optimizing digital workflows and introducing hybrid techniques that facilitate the precise transfer of prosthetic information while reducing the limitations of conventional methods.

Another direction of research was focused on dental aesthetics, a field that has evolved from a secondary concern into a central pillar of modern prosthodontics. The author's contributions

demonstrated that the aesthetic success of restorations depends on the complex interaction between high-performance ceramic materials, gingival biotype, digital planning technologies such as Digital Smile Design, and the patient's perception — within an interdisciplinary approach that integrates dento-gingival aesthetics with functionality and overall facial harmony.

Interdisciplinarity has been a constant element in my work. My activity has highlighted the role of interdisciplinarity in modern prosthodontics, with an emphasis on integrating principles from related specialties into treatment planning. The reviewed literature and consulted studies have underlined the role of modern materials in dental prosthetics, a topic also reflected in my contributions through reviews and articles discussing their applicability in clinical practice.

The research activity has resulted in numerous articles published in national and international journals, over twenty of which are indexed in ISI, as well as conference presentations. I have also elaborated patents with clinical applicability and authored textbooks for undergraduate and postgraduate education.

On the didactic level, my activity has focused on training generations of students and residents capable of integrating modern principles of dental prosthetics. I have introduced new concepts and emerging technologies into the university curriculum, with an emphasis on ergonomics, digitalization, and interdisciplinarity. I have consistently sought to combine theoretical knowledge with practical applicability, ensuring students are prepared to face current clinical realities.

A future objective is my involvement in coordinating doctoral research by defining relevant topics and building multidisciplinary teams. I believe the essential role of a habilitated professor is to train researchers capable of further developing the field. My vision is oriented toward scientific rigor, innovation, and international collaboration. Proposed topics for PhD students include prosthetic implantology, advanced biomaterials, digital dental aesthetics, and applied occlusion. My strategy is to create multidisciplinary teams and integrate Romanian research into global scientific networks, thereby contributing to the international progress of dental medicine.

In conclusion, this thesis synthesizes my scientific and didactic activity to date, with a focus on implant prosthetics, digital workflows, occlusion, and interdisciplinarity, oriented toward integrating scientific progress into clinical practice. My teaching and research work supports the training of young specialists and lays the foundation for future directions of study in modern dental prosthetics. Looking ahead, my areas of interest include the integration of artificial intelligence

into diagnosis and planning, the development of smart biomaterials, and the strengthening of international partnerships. These objectives define not only the natural continuity of my professional journey but also a firm commitment to contributing to the progress of dental prosthetics and the training of new generations of researchers.