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UNIVERSITY "TITU MAIORESCU" BUCHAREST

DOCTORAL SCHOOL

HABILITATION: DENTAL MEDICINE

Contributions to the Oral Rehabilitation of Partially and Totally Edentulous Patient of the Third Age

Abstract of the Habilitation Thesis

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Abstract of the Habilitation Thesis

The habilitation thesis, entitled **"Contribution to the Oral Rehabilitation of Partially and Totally Edentulous Patients of the Third Age,"** is structured according to the guidelines set forth by the National Council for the Certification of University Titles, Diplomas, and Certificates (CNATDCU). It also complies with the provisions of the National Education Law no. 1/2011, as subsequently amended, as well as the Order of the Ministry of National Education and Scientific Research no. 6129/2016. This order outlines the mandatory standards for awarding academic teaching titles, research and development degrees, doctoral supervisor qualifications, and the habilitation certificate. Furthermore, the thesis follows the regulations for obtaining the habilitation certificate as established by the IOSUD at "Titu Maiorescu" University of Bucharest.

This habilitation thesis comprehensively documents and concisely presents the scientific, professional, and educational accomplishments achieved since the conferment of the Doctorate in Dental Medicine. It also outlines a personal development plan for a career in academia and teaching.

The first chapter of the habilitation thesis is organized into three sections, each dedicated to highlighting the most significant scientific contributions made following the completion of the PhD thesis, which focused on the **"Clinical and Therapeutic Characteristics of Simple and Complicated Caries and Periodontitis in Elderly People**," with an emphasis on research directions.

The growth of the elderly population is both a national and global reality, with significant economic, social, and medical implications. In this context, geriatric dentistry has emerged as a specialized field dedicated to providing dental care services to older adults. This specialty encompasses the diagnosis, prevention, and treatment of oral health problems associated with the natural aging process and age-related diseases.

The oral rehabilitation of partially and totally edentulous elderly patients requires not only a thorough understanding of the patient's specific needs and conditions but also the selection of the most appropriate treatment options. These may involve the use of remaining natural teeth or dental implants, along with the application of modern materials and techniques in the fabrication of dental prostheses. Additionally, considerations such as maintenance feasibility and associated costs must be taken into account.

Based on studies conducted on the oral rehabilitation of elderly patients with partial or total edentulism, three main research directions have been identified. These are presented in the following subchapters:

Subchapter 1.1. *Clinical and Histopathological Studies with Impact on the Oral Rehabilitation of the Elderly Patient.* This section outlines contributions to the understanding of oral rehabilitation possibilities for partially and totally edentulous elderly patients based on clinical and histopathological research findings.

The studies conducted within this research direction demonstrate that the possibilities for oral rehabilitation in elderly patients are closely linked to their existing oral health status and are influenced by their general medical and social profiles. The profile of a third-age patient is complex, and the planning of oral rehabilitation must address several questions:

- What treatment options are available?
- What are the patient's preferences and expectations?
- What does post-treatment care entail?
- What are the maintenance requirements and the potential for repair or replacement?
- What are the financial implications of each treatment option?
- Do the patient and/or their caregivers fully understand all relevant considerations?

The histopathological component of the study highlights two key features characteristic of elderly individuals: epithelial atrophy and a shift in the collagen-to-fibroblast ratio, favoring collagen fibers. As a consequence of epithelial atrophy, surgical interventions should be as atraumatic as possible, with minimized operation times to reduce tissue trauma and improve healing outcomes.

Subchapter 1.2. *Analysis of the Possibilities for Improving Bone Support for Oral Rehabilitation Using Endosseous Dental Implants.* This section presents the research conducted on the placement of endosseous dental implants in patients with deficient bone support. The investigations pursued two primary objectives: to evaluate the feasibility of implant placement in individuals diagnosed with osteoporosis and to analyze bone augmentation techniques for patients without systemic diseases but with bone deficiencies.

Clinical studies and case reports provide insight into implant placement in osteoporotic patients, as well as various augmentation strategies employed in the maxillary and mandibular bone to allow implant placement. The key findings from this research direction are: endosseous dental implants can be successfully used even in cases with limited bone

availability, provided that appropriate treatment planning and techniques are employed and that combining bone augmentation procedures with the use of fibrin-enriched plasma concentrate streamlines the surgical process and reduces the risk of postoperative complications.

Additionally, these findings reinforce the conclusions from the histopathological study in Subchapter 1.1, particularly the need for minimally invasive surgery in elderly patients.

Subchapter 1.3. *Research on Modern Polymeric Materials Used in the Fabrication of Dental Prosthetics.* This research focused on the clinical evaluation of modern polymeric materials and techniques currently used in dental prosthetics. The clinical studies assessed the performance and behavior of several advanced polymers, including methyl polymethacrylate, dimethacrylate-based resins, polyvinylsiloxane, polyether ether ketone.

The studies evaluated these materials in terms of aesthetics, biocompatibility, durability, and adaptability to various prosthetic applications. The main conclusion is that modern polymeric materials, particularly when combined with CAD/CAM technology, enable the fabrication of high-quality dental restorations. These restorations meet contemporary requirements for aesthetics, functionality, and biocompatibility and can be successfully applied across the full spectrum of prosthetic treatments.

In the second chapter of the habilitation thesis, I have identified and outlined, based on my accumulated experience, the future research directions I intend to pursue in collaboration with prospective doctoral students. These studies will build upon the research areas already explored, aiming to bring further contributions to the field of oral rehabilitation for elderly patients. The proposed directions include: investigating the particularities of older adults to determine the most appropriate prosthetic treatment methods; exploring the relationship between systemic conditions, oral health status, and the oral microbiome; assessing the effects of polymedication on the oral cavity; evaluating the long-term impact of improving deficient bone support for oral rehabilitation with dental implants; identifying methods to reduce postoperative complications and healing time following bone augmentation procedures; studying biocompatible polymeric materials used in the fabrication of various fixed and removable prostheses; analyzing the role of computer-assisted technologies in oral rehabilitation.

The **bibliographic references** section includes both my scientific publications and works by other national and international authors in the same fields of interest, most of which are cited in my previously published studies. The **final section** of the habilitation thesis consists of **Annexes**, which include excerpts from the Web of Science citation reports.