

**"VICTOR BABEȘ" UNIVERSITY OF  
MEDICINE AND PHARMACY FROM TIMIȘOARA  
DOCTORAL SCHOOL  
DENTAL MEDICINE DOMAIN**



# **HABILITATION THESIS**

## **APPROACHES TO ORAL AND ASSOCIATED PATHOLOGIES IN THE PANDEMIC AND NON-PANDEMIC PERIOD**

### **A B S T R A C T**

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## ABSTRACT

The present thesis entitled "**Approaches to oral and associated pathologies in the pandemic and Non-pandemic Period**" represents a synthesis of the scientific research activity that I managed during the last years since I finished my PhD thesis and a presentation of my academic and professional career.

The scientific research was based on three directions of major importance at the present time, namely, the comparative follow-up of the evolution of the dental field in various periods, the close follow-up of oral cancer and the forms associated with it, with the identification of new important actors and new therapeutic approaches and last but not least the identification of new dental approaches in the case of frequently encountered oral pathologies, increasing the efficiency of the recovery process. Thus, the first part of the thesis was divided into three directions intended for the mentioned areas of interest.

It is essential to adapt research to current needs. Thus, the pandemic period, for example, was and continues to be challenging for all fields, dentistry being no exception. Patients with oral pathology exhibit a wide range of behaviors depending on the nature and severity of their condition and the period in which they are. The pandemic period proved to be hard in the dental field, mainly because of the aggressive viral spread, endangering the health of patients, as well as the employees of dental offices, and last but not least because of the restrictions imposed, which limited the access of patients to the stomatology. A correct approach, correlated with the past and adapted to the future, is essential for overcoming crisis situations.

Cancer is the most applicant and challenging condition, and the existing gaps stimulate continuous study in this field. Genesis of both oral and internal tumors is underpinned by intricate interplays of genetic predisposition, mutagenic stimuli, and epigenetic alterations. Genetic mutations, particularly in tumor suppressor genes and oncogenes, can impart a proclivity toward uncontrolled cellular proliferation. Carcinogenic agents, encompassing chemical compounds, ionizing radiation, and viral agents, are recognized for their potential to induce DNA damage and initiate tumorigenesis. Chronic inflammation, a hallmark of several tumors, fosters a microenvironment conducive to malignant transformation. Oral tumors exhibit diverse

histological subtypes, with squamous cell carcinoma constituting a predominant malignancy. Adenocarcinomas arising from minor salivary glands exhibit glandular structures with malignant cytological features. Benign tumors, such as fibromas and papillomas, are characterized by orderly cellular arrangements and minimal cytological atypia. The differential diagnosis involves detailed histopathological assessment, often aided by immunohistochemical analyses, to ascertain the nature and grade of the tumor. Internal tumors encompass an extensive spectrum of histological types originating from diverse tissues. Adenocarcinomas, exhibiting glandular differentiation, are pervasive among internal malignancies. The comprehensive histopathological evaluation employs a combination of macroscopic and microscopic analyses, supported by immunohistochemistry and molecular profiling, to elucidate the tumor's origin, grade, and potential for metastasis.

Therapeutic modalities encompass surgical intervention, radiation, target therapy and immunotherapy. Surgical resection remains a cornerstone in the management of both oral and internal tumors. For oral tumors, en bloc excision is executed, often followed by reconstruction to restore functional and aesthetic integrity. Internal tumors necessitate meticulous surgical resection with consideration for achieving negative margins and sparing vital structures. Advancements in surgical techniques, including minimally invasive procedures and robotic-assisted surgery, optimize precision and postoperative outcomes. Radiation therapy employs ionizing radiation, this modality selectively damages tumor DNA, impeding replication and inducing cell death. In curative settings, it aims to eradicate residual tumor cells post-surgery. In palliative contexts, it alleviates symptoms by controlling tumor growth. Pharmacological chemotherapeutic agents inhibit cell division and proliferation, targeting both rapidly dividing cancer cells and those with metastatic potential. Multidrug regimens are tailored to tumor types and stages. Targeted agents selectively inhibit molecular pathways crucial for tumor growth, minimizing collateral damage to healthy tissues. Immunotherapy, including immune checkpoint inhibitors, augments the body's immune response against cancer cells. Both approaches exhibit promise in specific tumor subsets.

Despite the evolution of diagnostic and treatment methods, the incidence rate tends to grow, and the increased mortality rate requires additional studies in this regard.

Oral pathologies encompass a wide range of disorders affecting the oral cavity, impacting millions of individuals worldwide, such that periodontal disease has a high prevalence worldwide and is estimated to affect up to 90% of the world. Thus, current dental problems can also pose various problems and actual studies are searching for new correlations and therapeutic approaches. With advancements in medical technology and research, innovative invasive and non-invasive approaches have emerged to improve the diagnosis, treatment, and management of frequently encountered oral pathologies. These innovative approaches offer patients improved outcomes, reduced pain, and quicker recovery times. As research and technology continue to advance, the field of oral healthcare will likely see further refinements and advancements in the management of these conditions.

The second chapter includes information about academic progress. I graduated from the Faculty of Dentistry in 1994. Six years later I obtained the title of medical specialist in oro-maxillo-facial surgery. In 2002 I graduated from the Faculty of General Medicine and in 2003 I obtained the title of medical specialist in general dentistry. Five years later I finished doctoral school, obtaining the title of primary doctor in general dentistry and in 2009 obtaining the title of a primary physician in oral and maxillofacial surgery. In 2013 I obtained the title of doctor of medical sciences. During this period, I was involved in diverse academic activities:

- coordinator of the dentoalveolar surgery discipline;
- member of the council of department II of the Faculty of Dental Medicine;
- coordinator of the didactic and practical activity with students of the 3rd and 4th years of dental medicine;
- coordinator of courses with students of the 3rd and 4th years of dental medicine;
- coordinator of clinical internships with students in the 3rd and 4th years of dental medicine;
- coordinator of clinical internships and courses with dentoalveolar surgery residents;
- coordination of residents' activity in the dentoalveolar surgery specialty;
- member of some support commissions in the admission, residency, obtaining the title of primary specialist, and teaching positions competitions.

The third chapter presents my professional achievements, which started in 1995, when I began to activate as a resident doctor in Oro-Maxillo-Facial Surgery and as a teaching staff at Oro-Maxillo-Facial Surgery Discipline, obtaining in 2000 the title of a specialist doctor in Oro-Maxillo-Facial Surgery. In 2003 I obtained the title of Doctor specialist in General Dentistry. From 2005 (Assistant Professor) until now (Associate Professor) I have continued my teaching activity in the discipline of Oral Surgery and Anesthesiology. In 2008 I obtained the title of Primary doctor in General Dentistry and in 2009- Primary doctor in Oro-Maxillo-Facial Surgery.

Since 2005 the medical career was completed by practicing as a primary doctor at Oro-Maxillo-Facial Surgery with clinical integration with ½ in the Oro-Maxillo-Facial Surgery department of the Timisoara Municipal Emergency Clinical Hospital. Later I was assigned as medical coordinator of the second operator block of the Timisoara Municipal Emergency Clinical Hospital. The main responsibilities were:

- providing medical assistance (consultations, emergencies, surgical interventions) in the Oro-Maxillo-Facial Surgery Department of the Timisoara Municipal Emergency Clinical Hospital;
- carrying out guards in the Department of Oro-Maxillo-Facial Surgery of the Timisoara Municipal Emergency Clinical Hospital;
- coordination of the activity of the Operating Block II of the Timisoara Municipal Emergency Clinical Hospital.

The last part of the thesis highlights academic and scientific perspectives. As an Associate Professor in the dental field, I find crucial the role that combines academic excellence with scientific inquiry. This position entails a dynamic blend of teaching, research, and service, contributing significantly to the advancement of dental education, patient care, and scientific knowledge. The development prospects can be divided into 4 large categories.

#### 1. Teaching and education:

It is important to be responsible for nurturing the next generation of dental professionals and to design and deliver curriculum, lectures, and hands-on training to dental students.

## 2. Research and scientific inquiry:

In the research domain, the aim is to contribute to the advancement of dental science by conducting research that addresses key challenges in the field. I propose to formulate research questions, design experiments, collect, analyze data, and publish findings.

## 3. Mentorship and Guidance:

For continuous development both academic and scientific is important to serve as a mentor to students, graduate students, and aspiring researchers. I will provide guidance on research methodologies, academic career paths, and professional development.

## 4. Clinical Integration:

In dental education, clinical skills are paramount. A good professional bridges the gap between theoretical knowledge and practical application. I will continuously oversee clinical training, ensuring that students acquire the necessary skills to provide safe and effective dental care.

The thesis ends with bibliographic references, which include personal publications and a list of 10 representative publications.

## LIST OF 10 REPRESENTATIVE SCIENTIFIC PAPERS

1. **Rivis M**, Juncar RI, Moca AE, Moca RT, Juncar M, Țenț PA. Patterns of Mandibular Fractures through Human Aggression: A 10-Year Cross-Sectional Cohort Retrospective Study. **J Clin Med**. 2023;2(12):4103. Link: <https://www.mdpi.com/2077-0383/12/12/4103>
2. Gruescu ACS, Popoiu C, Levai MC, Tudor R, Fericean RM, **Rivis M**. A Cross-Sectional Assessment of Parental Concerns in the Pediatric Surgery Department during the COVID-19 Pandemic. **Healthcare (Basel)**. 2023;11(9):1330. Link: <https://www.mdpi.com/2227-9032/11/9/1330>
3. Roi CI, Roi A, Nicoară A, Nica D, Rusu LC, Soancă A, Motofelea AC, **Riviș M**. Impact of Treatment on Systemic Immune-Inflammatory Index and Other Inflammatory Markers in Odontogenic Cervicofacial Phlegmon Cases: A Retrospective Study. **Biomedicines**. 2023; 11(6):1710. Link: <https://www.mdpi.com/2227-9059/11/6/1710>
4. Racea RC, Chioran D, Anton A, Dinu S, Buzatu R, **Rivis M**. The in vitro Toxicological Potential of Lactobacillus paracasei on Detroit 562 Pharyngeal Cancer Cells. **Journal of Agroalimentary Processes and Technologies**. 2023, 29(1), 16-22. Link: [https://journal-of-agroalimentary.ro/admin/articole/44910L03\\_Rivis-Mircea\\_29-1-\\_2023\\_16-22.pdf](https://journal-of-agroalimentary.ro/admin/articole/44910L03_Rivis-Mircea_29-1-_2023_16-22.pdf)
5. **Rivis M**, Nica DF, Nicoară A, Chioran D, Roi C. Gingival tumors - clinical and histopathological aspects. **Dental target clinic&lab**. 2023; 8,2(63): 19-20.
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7. Horhat RM, Bumbu BA, Orel L, Velea-Barta O, Cirligeriu L, Chicin GN, Pricop M, **Rivis M\***, Dinu S, Horhat DI, Bratosin F. Assessing the Sealing Performance and Clinical Outcomes of Endodontic Treatment in Patients with Chronic Apical Periodontitis Using Epoxy Resin and Calcium Salicylate Seals. **Medicina**. 2023;59(6):1137. Link: <https://www.mdpi.com/1648-9144/59/6/1137>
  
8. Olariu I, Todor L, Popovici RA, Fluieras R, Todor SA, Kis AM, Roi C, **Riviş M**. Perioperative management of tooth extraction in patients with antiplatelet and anticoagulant treatment. **Medicine in Evolution**. 2022;28,4:461-468.
  
9. Todor L, **Riviş M\***, Todor SA, Ghircu Radu R, Fluieras R, Vasca E, Matichescu AM. The Caldwell-Luc approach to maxillary cyst enucleation. **Medicine in Evolution**. 2023; 29 (1):76-82.
  
10. Roi C, Gaje PN, Ceauşu RA, Roi A, Rusu LC, Boia ER, Boia S, Luca RE, **Riviş M**. Heterogeneity of Blood Vessels and Assessment of Microvessel Density-MVD in Gingivitis. **Journal of Clinical Medicine**. 2022;11(10):2758. Link: <https://pubmed.ncbi.nlm.nih.gov/35628885/>