UNIVERSITATEA DE MEDICINĂ ŞI FARMACIE
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Progress in the management of polytraumatized patients. New directions of research in modern medicine

REZUMATUL TEZEI DE ABILITARE

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Abstract

From the beginning of my medical career until now, I have given a special attention to the field of traumatological surgery. The efforts that I have made in the last 30 years have had as main goal the achievement of a high level of performance and recognition of the results obtained in the development of trauma management system. In all these years, I have tried to integrate the concept of multidisciplinarity in the trauma department and to use my entire experience, in training young people who have completed their training at the Emergency Clinical Hospital Bucharest, but also in preparing numerous generations of trauma residents.

In support of my statements above comes the desire that has led me throughout my career to combine research directions in the field of traumatology with those from related fields of medicine. Thus, over time, I have managed to contribute through scientific research, teaching activity and clinical activity to the implementation of trauma protocols, within the Bucharest Emergency Clinical Hospital. Obviously, a special aspect of teaching training refers to the fact that I must combine the latest scientific knowledge acquired over time with my ability to communicate and work within a team, both in the surgical and research area. This habilitation thesis summarizes my postdoctoral, professional, didactic and scientific activity. It is divided into two main sections, in accordance with the criteria recommended and approved by the National Council for Attestation of University Degrees, Diplomas and Certificates (CNATDCU). Considering the achievements I have registered so far in the field of traumatology, I propose a series of future research projects that I want to follow in the coming years, together with the team from the Bucharest Emergency Clinical Hospital.

In - Section I - significant data are presented both from scientific articles and from books, book chapters or research projects, in which I have participated as principal author or co-author, over the years. Updated definitions of polytrauma, the history and evolution of polytrauma patient management, as well as a careful analysis of abdominal trauma are presented. The thesis also presents the importance of setting up a trauma registry in Romania, which will ensure a better management of the polytraumatized patient.

Throughout Section I are presented the most important achievements I have had on this topic through articles, published in ISI indexed journals, with impact factor, books and book chapters. Also in Section I the results of physico-chemical and biological characterizations obtained on biocompatible materials with antimicrobial properties and applications in the

medical field are also presented. Among the studied biomaterials we mention: montmorillonite (MMT) and MMT-Ag layers deposited on Silicon substrate, wormwood essential oil (*Arthemisia absinthium* L., WW EO), hydroxyapatite nanoparticles functionalized with wormwood essential oil (HApW) enamel, polydimethylsiloxane (PDMS) and PDMS-Enamel deposited on the Titan substrate, silver-doped hydroxyapatite nanoparticles x_{Ag} = 0.05 ($HApAg_5$) and x_{Ag} = 0.2 ($HApAg_{20}$). The results presented in this chapter have been published in ISI indexed international journals. Considering that most intrahospital infections associated with implants are attributed to the *Candida albicans* species, the results of our studies may have an important contribution to the development of new composite coatings with antifungal properties. Studies have shown that the materials are biocompatible and have remarkable antimicrobial properties which makes them suitable for biomedical applications.

In Section II my professional, scientific and academic results obtained throughout my career are presented. This section presents the main personal contributions in the field of traumatology as well as nanotechnology. This demonstrates the ability to develop future research projects, as well as the spirit of teamwork.

The three component parts of this section are:

- Presentation of academic and medical career
- Scientific activities and research fields
- International visibility.

In this chapter I have presented the most significant aspects of my career, both in the field of traumatology and related fields. I considered that they add value to the habilitation thesis. The scientific research I have done so far has resulted in the publication of articles, books, book chapters, conferences, as well as participation in numerous research projects. I believe that all my results have contributed to increasing my visibility and also to the increase of the prestige of the university I represent. Also here are my future plans in terms of teaching and research. These derive from the knowledge gained so far, both me and the team I coordinate in this direction. Personally, I believe that by continuing the research in this complex field we can reach the realization of management protocols for polytraumatized patients. At the end of each chapter of the thesis, I have attached the list of the most important bibliographical references that I have used in the elaboration of this paper.