"CAROL DAVILA" UNIVERSITY OF MEDICINE AND PHARMACY BUCHAREST

DOCTORAL SCHOOL

DENTAL MEDICINE DOMAIN

ANALYSIS OF CRANIOFACIAL GROWTH AND DEVELOPMENT IN ORTHODONTICS: MODERN INVESTIGATIONS

SYNOPSIS OF THE HABILITATION THESIS

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The habilitation thesis with the title "**Analysis of Craniofacial Growth and Development in Orthodontics: Modern Investigations**" is structured according to the recommendations of the National Council for Attestation of University Titles, Diplomas and Certificates (CNATDCU) and the National Education Law no. 1/2011, with subsequent amendments, Order of the Ministry of National Education and Scientific Research no. 6129/2016, regarding the approval of the minimum necessary and mandatory standards for the conferring of teaching titles in higher education, professional research and development degrees, the quality of doctoral supervisor and the habilitation certificate and respectively the regulation on obtaining the habilitation certificate within IOSUD.

The habilitation thesis presents in a documented and synthesized manner both the scientific, professional and didactic achievements since the conferment of the scientific title of ***Doctor of Dental Medicine*** until now, as well as the own development plan of the university and didactic career.

I set out to present some of the research themes that particularly concerned me and the main original scientific results obtained in one of the areas of major interest in orthodontics, that of craniofacial growth and development and correlations between the etiology and evolution of some dento-maxillary anomalies.

The first chapter of the habilitation thesis entitled **Analysis models of three-dimensional cranio-facial growth by non-invasive methods** is structured in 3 sub-chapters dedicated to the exposition of the most relevant scientific contributions after the completion of the PhD thesis, following research directions.

Subchapter 1.1 ***Clinical research on growth and development processes carried out on photographic images (face/profile)***

Subchapter 1.2 ***Studies on sonic digitization, a non-radiological alternative to conventional radiological cephalometry***

Subchapter 1.3 ***Modern techniques of teleradiographic research of soft tissue growth***

The second chapter reveals a comparative study on the changes in the skull base in patients with different dento-maxillary anomalies, aiming to increase the predictability of orthodontic treatment. The sphenoidal, foramenian angles, the length of the S-Ba clivus and the S-N planum were evaluated, establishing the correlations between the variation of these values and the evolution of dento-maxillary anomalies. Orthodontic and dento-facial orthopedic treatment should aim at achieving a dento-maxillary balance, correlating the orthodontic changes with the gradual harmonization of facial features. The therapeutic approach will have to take into account the changes that occur in the thickness of the soft tissues

of the nose, lips and chin during growth and those brought by the natural phenomena of aging, functionality and wear of the dento-maxillary apparatus. In any type of therapeutic philosophy, the limit is always dictated by the harmony of facial features and aesthetics. Rigid adherence to skeletal standards and treatment planning according to these standards can introduce serious errors in treatment philosophy.

The third chapter is intended for the evaluation of facial asymmetry by anthropological and radiological methods (frontal teleradiography), with possibilities of orthodontic and orthopedic treatment. Cephalometric measurements were performed by two examiners, 3 times per film, under the same tracking conditions, for each landmark and parameter, resulting in 6 statistically interpreted values to minimize measurement errors.

We noticed significant correspondences between the different parameters of the skull base, as well as between them and the maxillofacial ones.

Several factors could be implicated in the etiopathogenesis of dento-maxillary anomalies, the growth changes that may occur at the base of the skull being among them, thus influencing the prognosis of the anomaly and the therapeutic pathway.

The bibliographic references include personal publications alongside scientific works developed by other authors, reference treatises, national and international monographs, in the same areas of interest.

The last section of the habilitation thesis includes **Proposals for new scientific, professional and academic achievements**. I have an ambitious goal: that of promoting the new and the novelty of science and technology in the activity of the discipline, to implement new working methods, to encourage an innovative attitude on the part of colleagues, with the aim of increasing the quality of the medical act, respectively of the orthodontic treatments. Current growth and development models are constantly changing, and their study constitutes a continuous and subsequent challenge to my scientific activity so far.

I emphasize here once again that, in my opinion, personal career development cannot be separated from that of direct collaborators, nor from that of the next generations of doctors, for whose professional training we are responsible, both theoretically and practically. As such I will point my attention in this direction, all the more so as the quality of resident tutor broadens my opportunity to interact with younger colleagues.