Digital Systems in Medical Science and Modern Dentistry

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Abstract. Digital expert systems, commonly used in medicine, can be implemented successfully in the analysis and planning of treatments in dentistry. In implant-prosthetic therapy, these software applications represent necessary adjuvant tools in optimizing therapeutic decisions regarding the pro-implant and implant stages as well as in creating a therapeutic planning algorithm. PRODENT Acad Expert (data recording and database) and PRODENT Indices (calculation of biological indices and recommendation for the optimal treatment solution) (Neo-Tech, Romania) are tools that allows the registration and entry of data in the database, registration of clinical and biological indices in pretreatment and post-implant stage, respectively the recommendation of an optimal prosthetic solution. The use of this application is necessary in monitoring changes related to the biological components of the stomatognathic system in postimplant stage. Expert applications for the assessment of mucosal and bone support, planning of bone addition procedures and positioning of dental implants laid the foundations of digital implantology (Implant 3D, Universe; NobleGuide, Nobel Biocare; Digital Smile Design, DSD; SimPlant, Dental Materialize; Virtual Implant Placement, BioHorizons; ImplantMaster, iDent; Implant 3D, Media Lab; EasyGuide, Keystone Dental). The Digital Smile Design favors the planning of prosthetic therapy and the design of the future prosthetic work in accordance with the aesthetic principles and the requirements of the patients, based on a motivational mock-up. Literature data demonstrate the increase in the long-term success rate in digital-assisted implant-prosthetic therapy and justify the widespread expansion of the use of digital applications in current contemporary dental practice.

Keywords: *medicine, dentistry, diagnostic, AI, expert systems, digital*

Introduction

The digital systems using artificial intelligence (AI) have many applications both in medicine and dental science, from recording a patient's