EDITORIAL

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Rapid transition to digital healthcare and the role of oral and maxillofacial surgeons

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The concept of P4 in medicine, first introduced in the mid-2000s, is based on an acronym for four main goals of medical innovation: predicated, personalized, preemptive, and party treatment. The concept is to predict diseases in advance, prevent them, provide customized medical care specialized for individual patients, and increase the role of patients in the process[1]. The shift in healthcare paradigm, described as P4 medicine, has led medical institutions to revolutionize care systems, industrialize medical technology, and transform business models in pharmaceutical and medical device companies and health IT companies. The cause of the rapid change in medical care, which was expected to change gradually through research and verification, is the coronavirus disease 2019 (COVID-19) pandemic. Due to the COVID-19 pandemic, the demand for medical staff and the need to establish a precision medical system have increased. Data-driven medicine, such as medical artificial intelligence, has become a more critical part of medicine, and regulations on digital healthcare, such as telemedicine, have been relaxed in many countries. As a result, platform companies have entered the medical industry. Oral and maxillofacial surgery, where many new technologies have been actively applied, is at the center of these changes, and oral and maxillofacial surgeons must pay attention to and recognize the rapid technological innovation of current medical care.

With recent technological innovations, there is a change from hardware-based to software-based medical devices. Software-based medical devices are developing beyond health assistance, such as sleep monitoring, focusing on artificial intelligence and digital therapeutics for diagnosis, treatment, and patient monitoring in the real world.

The early stage of artificial intelligence has focused on medical image and pathology diagnoses. As a result, many companies have successfully commercialized automatic medical image and pathology diagnostic devices that are widely used in clinical practice. Recently, more advanced artificial intelligence research has analyzed processes from human embryonic stage to death[2]. In oral and maxillofacial surgery, early studies used panoramic radiography and cephalometry, and three-dimensional imaging for diagnosis and treatment of maxillofacial deformity is being actively studied[3]. Artificial intelligence is increasingly important due to the increasing demand for medical staff, precision medicine, and cost reduction. Artificial intelligence also is used across the healthcare industry, including for overall hospital management in patient care.

Digital therapeutics are evidence-based software products applied directly to patients to prevent, manage, and treat diseases or disorders[4]. To date, digital therapeutics are being actively developed for hypertension, diabetes, angina pectoris, Alzheimer's disease, insomnia, ADHD (attention deficit hyperactivity disorder), and mental disorders. Although digital therapeutics research previously has not been actively conducted in oral and maxillofacial surgery[5], it is expected that behavioral correction or cognitive behavioral therapy will be helpful in temporomandibular disorder and in rehabilitation of cancer patients.

Source technologies for digital health care are developing rapidly; however, without medical experts, engineers, and industries, application of such platforms will be limited. In addition, patient data, which are most needed for technological development in digital healthcare, could be used unethi-

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cally. Oral and maxillofacial surgeons have the ability and qualifications to identify unmet clinical needs and use patient data ethically and conservatively. Oral and maxillofacial surgeons should not be afraid of rapid changes in the medical paradigm. Still, these surgeons should actively be studied and should establish standards for use of new technologies in oral and maxillofacial clinical practice.

Conflict of Interest

No potential conflict of interest relevant to this article was reported.

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