



Era of Digital Dentistry: Minimizing the suffering of Patients & Maximizing the Accuracy of Treatment

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Overview

The era of digital dentistry has been disruptive and paved ways for improving the patient's experience in dental operatory.

Introduction

Digital systems have taken over our lives, personally and professionally. Even though conventional dental care has been excellent in diagnosing and treating patients, there has been a rise in digitalization in dentistry for a better patient and dental professional experience in terms of being convenient, faster, more accurate and efficient. The earliest introduction of dental digital system was in 1987, when Dr. Francis Mouyen launched Radiovisiography (RVG), which reduced the radiation exposure and time involved significantly. Around the same time, CEREC (Sirona) and Procera (Nobel Biocare), the first CAD/CAM devices became popular for their applications in inlays, onlays, veneers, copings, full coverage crowns, dentures, surgical stents for implant placement and maxillofacial prosthesis fabrication with less chances of error and reduced chairside time compared to conventional technique. Various oral scanner systems like CEREC AC, ED4 Dentist, iTero facilitate a clean and streamlined impression while causing minimal patient discomfort. A study by Jennifer A et al in 2018 concluded that patients

preferred digital impressions over conventional alginate impressions. The scanners proved to be comparable efficient in impression making.

Digital Smile Designing is a much useful tool in restorative dentistry as it improves the dental team's understanding of the dynamic movement and relation between teeth, gums, lips and patient's smile. They help establish the aesthetic principles considering the limitations and risks in each case. Luca et al in 2019 applied Digital Smile Design for aesthetic and functional rehabilitation of a patient and reported high level of patient satisfaction in a complex prosthetic treatment.

Virtual articulators and digital face bows have revolutionized prosthetic dentistry by reinforcing anatomical considerations, reducing errors and providing an accessible digital picture for implant diagnosis and treatment planning. However, the most significant aspect of digitalization in dentistry has been its implementation in practice and patient record management along with digital patient education. These systems enable better management of the practice and more organized patient records. Patient education is of utmost importance in dentistry and these systems make education enjoyable to the patients with 3D video presentations, voice activated audio films and lives educational videos.

Conclusion

Considering the milestones digital dentistry has helped dental professionals create, one would hope virtual simulations of patients by super imposing 3D images of skull, facial tissues and dentition would enable pre-operative clinical assessment, treatment planning, patient communication and anatomical documentation. The technique is feasible and looks promising. These could be an important part of dental education in the future by

facilitating patient replication for reality simulation with dynamic movements with 4D holograms.

Digitalization has disrupted dentistry by improving patient experience & satisfaction, providing better techniques for assessment and diagnosis as well as enhanced material properties for restoration. Among others, one novel advantage is that it offers fresh, efficient and evolved ways of teaching the future dental professionals.