

JDR articles explore 3-D printing for oral and dental tissue engineering

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Today, the International and American Associations for Dental Research (IADR/AADR) published a case report on the first application of a 3D printed scaffold for periodontal tissue engineering in a human patient, along with a review of 3D printing for oral and craniofacial tissue engineering. These papers are published in the latest clinical supplement to the *Journal of Dental Research*, which encompasses all areas of clinical research in the dental, oral and craniofacial sciences, and brings emerging contributions in discovery and translational science to clinical application for the healthcare community.

In the case report titled "3D Printed Bioresorbable Scaffold for Periodontal Repair," researchers Giulio Rasperini, Sophia P. Pilipchuk, Colleen L. Flanagan, Chan Ho Park, Giorgio Pagni, Scott J. Hollister and William V. Giannobile provide the first reported human case of treatment of a large periodontal osseous defect with a 3D printed, bioresorbable, patient-specific, polymer scaffold and signaling growth factor. A patient diagnosed with severe destruction of periodontal tissues presented for treatment to preserve his dentition. The treated site remained intact for 12 months following therapy but failed at 13 months. Although this case was unsuccessful long term, the authors believe the approach warrants further study on how 3D printing can be implemented for the reconstruction of dental and craniofacial anomalies.

In a review titled "3D Bioprinting for Regenerative Dentistry and Craniofacial Tissue Engineering" reviewers Fabian Obregon, Cedryck Vaquette, Saso Ivanovski, Dietmar Huttmacher and Luiz Bertassoni

describe different 3D bioprinting methods. They also summarize how different classes of biomaterials (polymers, hydrogels, ceramics, composites and cell-aggregates) may be utilized for 3D biomanufacturing of scaffolds, as well as craniofacial tissue analogues.

More information: jdr.sagepub.com/

Provided by International & American Associations for Dental Research

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