

Digital procedures in implant surgery

Effective support for the treatment process

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1. Bayer G, Kistler F, Kistler S et al. Versorgungsmöglichkeiten ohne Sinusbodenelevation mit angulierten Implantaten - 6 Jahre Erfahrungen. *Implantologie* 2012; 20: 195-204.
2. Bidgood WD, Jr., Horii SC, Prior FW et al. Understanding and using DICOM, the data interchange standard for biomedical imaging. *J Am Med Inform Assoc* 1997; 4: 199-212.
3. Blume O, Donkiewicz P, Back M et al. Bilateral maxillary augmentation using CAD/CAM manufactured allogenic bone blocks for restoration of congenitally missing teeth: A case report. *J Esthet Restor Dent* 2019.
4. Bover-Ramos F, Vina-Almunia J, Cervera-Ballester J et al. Accuracy of Implant Placement with Computer-Guided Surgery: A Systematic Review and Meta-Analysis Comparing Cadaver, Clinical, and In Vitro Studies. *Int J Oral Maxillofac Implants* 2018; 33: 101-115.
5. Deppe H, Betz W, Maager B et al. S2k-Leitlinie: Dentale digitale Volumetomografie. AWMF-Reg.-Nr. 083/005 2013.
6. Ender A, Zimmermann M, Mehl A. Accuracy of complete- and partial-arch impressions of actual intraoral scanning systems in vitro. *Int J Comput Dent* 2019; 22: 11-19.
7. Horner K, Jacobs R, Schulze R. Dental CBCT equipment and performance issues. *Radiat Prot Dosimetry* 2013; 153: 212-218.
8. Kernen F, Benic GI, Payer M et al. Accuracy of Three-Dimensional Printed Templates for Guided Implant Placement Based on Matching a Surface Scan with CBCT. *Clin Implant Dent Relat Res* 2016; 18: 762-768.
9. Khoury F. *Augmentative Verfahren in der Implantologie*. Berlin: Quintessenz Verlag 1: 2009.
10. Mischkowski RA, Pulsfort R, Ritter L et al. Geometric accuracy of a newly developed cone-beam device for maxillo-facial imaging. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2007; 104: 551-559.
11. Neugebauer J, Kistler S, Adler S et al. Möglichkeiten des SICAT Planungsprogramms: 8 Jahre klinische Erfahrungen und zukünftige Optionen. *Quintessenz Zahntech* 2014; 40: 412-430.
12. Neugebauer J, Kistler F, Kistler S et al. CAD/CAM-produced surgical guides: Optimizing the treatment workflow. *Int J Comput Dent* 2011; 14: 93-103.
13. Neugebauer J, Stachulla G, Ritter L et al. Computer-aided manufacturing technologies for guided implant placement. *Expert Rev Med Devices* 2010; 7: 113-129.
14. Nitsche T, Menzebach M, Wilfang J et al. S2k-Leitlinie: Indikationen zur implantologischen 3D-Röntgendiagnostik und navigationsgestützten Implantologie. AWMF-Reg.-Nr. 083/011 2012.
15. Pompa V, Galasso S, Cassetta M et al. A comparative study of Magnetic Resonance (MR) and Computed Tomography (CT) in the pre-implant evaluation. *Ann Stomatol (Roma)* 2010; 1: 33-38.
16. Reich S, Kern T, Ritter L. Options in virtual 3D, optical-impression-based planning of dental implants. *Int J Comput Dent* 2014; 17: 101-113.
17. Ritter L, Neugebauer J, Dreiseidler T et al. 3D X-ray meets CAD/CAM dentistry: a novel procedure for virtual dental implant planning. *Int J Comput Dent* 2009; 12: 29-40.
18. Schlee M, Rothamel D. Ridge augmentation using customized allogenic bone blocks: proof of concept and histological findings. *Implant dentistry* 2013; 22: 212-218.
19. Seiler M, Kammerer PW, Peetz M et al. Customized lattice structure in reconstruction of three-dimensional alveolar defects. *Int J Comput Dent* 2018; 21: 261-267.