

Ausgabe: BDIZ konkret 3/2025

Titel: Das dentale MRT – ein neues bild-gebendes Verfahren in der Implantologie?

Autoren: Markus Bach & Dr. Georg Bach

Literatur

1. ZM-Redaktion, Was kann das dentale MRT? zm, 114 Nr. 20, 16.10.2024 (1728)
2. Bundesamt für Strahlenschutz, Online Artikel: Nutzen und Risiko von Röntgendiagnostik, Zugriff am 05.01.2024: <https://www.bfs.de/DE/themen/ion/anwendung-medizin/diagnostik/roentgen/nutzen-risiko.html#Rechtfertigung>
3. Niraj, Lav Kumar et al. "MRI in Dentistry- A Future Towards Radiation Free Imaging - Systematic Review." Journal of clinical and diagnostic research : JCDR vol. 10,10 (2016): ZE14-ZE19. doi:10.7860/JCDR/2016/19435.8658
4. Flügge, T., Gross, C., Ludwig, U., Schmitz, J., Nahles, S., Heiland, M., & Nelson, K. (2023). Dental MRI-only a future vision or standard of care? A literature review on current indications and applications of MRI in dentistry. Dento maxillo facial radiology, 52(4), 20220333. <https://doi.org/10.1259/dmfr.20220333>
5. Schwarz, L., Unger, E., Gahleitner, A., Rausch-Fan, X., & Jonke, E. (2023). A novel approach for gingiva thickness measurements around lower anterior teeth by means of dental magnetic resonance imaging. Clinical oral investigations, 28(1), 18. <https://doi.org/10.1007/s00784-023-05459-4>
6. Hövener, J. B., Zwick, S., Leupold, J., Eisenbeiß, A. K., Scheifele, C., Schellenberger, F., Hennig, J., Elverfeldt, D. V., & Ludwig, U. (2012). Dental MRI: imaging of soft and solid components without ionizing radiation. Journal of magnetic resonance imaging : JMRI, 36(4), 841–846. <https://doi.org/10.1002/jmri.23712>
7. Al-Haj Husain, Adib et al. "Visualization of the Inferior Alveolar Nerve and Lingual Nerve Using MRI in Oral and Maxillofacial Surgery: A Systematic Review." Diagnostics (Basel, Switzerland) vol. 11,9 1657. 10 Sep. 2021, doi:10.3390/diagnostics11091657
8. Al-Haj Husain, Adib et al. "Dental MRI of Oral Soft-Tissue Tumors-Optimized Use of Black Bone MRI Sequences and a 15-Channel Mandibular Coil." Journal of imaging vol. 8,5 146. 22 May. 2022, doi:10.3390/jimaging8050146
9. Reda, R., Zanza, A., Mazzoni, A., Cicconetti, A., Testarelli, L., & Di Nardo, D. (2021). An Update of the Possible Applications of Magnetic Resonance Imaging (MRI) in Dentistry: A Literature Review. Journal of Imaging, 7(5), 75. <https://doi.org/10.3390/jimaging7050075>
10. Al-Haj Husain, A., Stadlinger, B., Winklhofer, S., Piccirelli, M., & Valdec, S. (2024). Dentale Magnetresonanztomographie in der Implantatchirurgie [Dental Magnetic Resonance Imaging in Implant Surgery - Status Quo and Outlook]. Swiss dental journal, 134(3), 100–112. <https://doi.org/10.61872/sdj-2024-03-12>

11. Fuglsig, J. M. C. E. S., Reis, I. N. R. D., Yeung, A. W. K., Bornstein, M. M., & Spin-Neto, R. (2024). The current role and future potential of digital diagnostic imaging in implant dentistry: A scoping review. *Clinical oral implants research*, 35(8), 793–809. <https://doi.org/10.1111/clr.14212>
12. Flügge, T., Ludwig, U., Winter, G., Amrein, P., Kernen, F., & Nelson, K. (2020). Fully guided implant surgery using Magnetic Resonance Imaging - An in vitro study on accuracy in human mandibles. *Clinical oral implants research*, 31(8), 737–746. <https://doi.org/10.1111/clr.13622>
13. Flügge, T., Ludwig, U., Hövener, J. B., Kohal, R., Wismeijer, D., & Nelson, K. (2020). Virtual implant planning and fully guided implant surgery using magnetic resonance imaging-Proof of principle. *Clinical oral implants research*, 31(6), 575–583. <https://doi.org/10.1111/clr.13592>
14. Al-Haj Husain, A., Valdec, S., Winklhofer, S., Piccirelli, M., Hainc, N., Kulcsar, Z., Essig, H., Frauenfelder, T., Spin-Neto, R., Kessler, P., An Lie, S., & Stadlinger, B. (2024). Dentale Magnetresonanztomographie: Praxisnahe Fallbeispiele und Bewertung von Vor- und Nachteilen in der Zahnmedizin und Mund-, Kiefer- und Gesichtschirurgie [Dental Magnetic Resonance Imaging: Practical insights and evaluation of benefits and drawbacks in dentistry and oral and maxillofacial surgery]. *Swiss dental journal*, 134(4), 116–150. <https://doi.org/10.61872/sdj-2024-04-08>
15. Nozawa, M., Fukuda, M., Kotaki, S., Tomoda, D., Morishita, A., Akiyama, H., & Ariji, Y. (2025). Evaluation of temporomandibular joint osteoarthritis using a new FRACTURE sequence of 3.0T MRI. *Dento maxillo facial radiology*, 54(1), 64–69. <https://doi.org/10.1093/dmfr/twae065>
16. Bohner, L., Dirksen, D., Hanisch, M., Sesma, N., Kleinheinz, J., & Meier, N. (2023). Artifacts in magnetic resonance imaging of the head and neck: Unwanted effects caused by implant-supported restorations fabricated with different alloys. *The Journal of prosthetic dentistry*, S0022-3913(23)00554-1. Advance online publication. <https://doi.org/10.1016/j.prosdent.2023.08.018>
17. Bohner, L., Hanisch, M., Parize, H., Sesma, N., Kleinheinz, J., & Meier, N. (2023). SEMAC + VAT for Suppression of Artifacts Induced by Dental-Implant-Supported Restorations in Magnetic Resonance Imaging. *Journal of clinical medicine*, 12(3), 1117. <https://doi.org/10.3390/jcm12031117>
18. Probst, M., Richter, V., Weitz, J., Kirschke, J. S., Ganter, C., Troeltzsch, M., Nittka, M., Cornelius, C. P., Zimmer, C., & Probst, F. A. (2017). Magnetic resonance imaging of the inferior alveolar nerve with special regard to metal artifact reduction. *Journal of cranio-maxillo-facial surgery : official publication of the European Association for Cranio-Maxillo-Facial Surgery*, 45(4), 558–569. <https://doi.org/10.1016/j.jcms.2017.01.009>
19. Flügge, T., Vinayahalingam, S., van Nistelrooij, N., Kellner, S., Xi, T., van Ginneken, B., Bergé, S., Heiland, M., Kernen, F., Ludwig, U., & Odaka, K. (2025). Automated tooth segmentation in magnetic resonance scans using deep learning - A pilot study. *Dento maxillo facial radiology*, 54(1), 12–18. <https://doi.org/10.1093/dmfr/twae059>
20. Greiser, A., Christensen, J., Fuglsig, J. M. C. S., Johannsen, K. M., Nixdorf, D. R., Burzan, K., Lauer, L., Krueger, G., Hayes, C., Kettless, K., Ulrici, J., & Spin-Neto, R. (2024). Dental-dedicated MRI, a novel approach for dentomaxillofacial diagnostic imaging: technical specifications and feasibility. *Dento maxillo facial radiology*, 53(1), 74–85. <https://doi.org/10.1093/dmfr/twad004>

21. ZM-Redaktion, Das weltweit erste dentale MRT ist da, zm-online 13/ 2024
22. Grandoch, A., J. Oeser, J. E. Zoller, N. Grosse Hokamp, T. Lichtenstein, and J. Neugebauer. 2023. 'Morphological Studies to Identify the Nasopalatine and Inferior Alveolar Nerve Using a Special Head and Neck MRI Coil', *Journal of Craniofacial Surgery*, 34: 1351–56.
23. Grandoch, A., N. Peterke, N. G. Hokamp, J. E. Zoller, T. Lichenstein, and J. Neugebauer. 2021. '1.5 T MRI with a Dedicated Dental Signal-Amplification Coil as Noninvasive, Radiation-Free Alternative to CBCT in Presurgical Implant Planning Procedures', *International Journal of Oral and Maxillofacial Implants*, 36: 1211–18.