

[Artifacts in MR imaging of the temporomandibular joint caused by dental alloys: a phantom model study at T1.5]

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PURPOSE: The influence of dental alloys on MRI of the temporomandibular joint was studied using a phantom model for this joint. **METHODS:** At 1,5 T, 15 dental alloys and 14 of their most important components were investigated acquiring sagittal (FOV: 150 mm) and transverse (FOV: 250 mm) T1-weighted SE images. In 11 cases, T1- and T2*-weighted FLASH images were measured additionally. The artifacts were assessed qualitatively as well as quantitatively, and the samples were subdivided into four artifact categories. **RESULTS:** Ag, Cu, Ga, In, Tl, Sn, Zn, amalgam, the precious alloys, the Au-Pd and Ag-Pd alloys showed no artifacts (category I). Minimal artifacts below 10 mm on transverse images (category II) were found for Cr, Pd, Pt and for the Ni-Cr alloy. Mn and the remaining non-precious alloys induced artifacts up to 30 mm (category III). Significant artifacts-more than 30 mm-(category IV) were caused by Ni-Cr and 18/8 wires and by Co, Fe, and Ni. T2*-weighted FLASH proved to be more susceptible for artifacts than T1-weighted SE and FLASH techniques. **CONCLUSIONS:** In contrast to dental alloys for fixed prosthodontics, Ni-Cr- or 18/8 wires used for orthodontic bands can influence not only the image quality, but also the diagnostic reliability of MRI of the temporomandibular joint.

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